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DRUGS AND ANIMAL EXPERIMENTATION

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The origin of the belief of mankind in the efficacy of drugs in the treatment of disease is a most interesting subject for speculation. The use of drugs antedates written accounts. Certainly the most primitive people on the earth today employ drugs as curative agents, and the earliest written records tell of the uses of drugs and poisons. We know that at certain periods disease was looked on as evidence of displeasure of the supreme being or beings, and that it was in the nature of a punishment visited upon man.

The view has been expressed that, since many of the materials used as remedies are disagreeable, either in odor, taste, texture or their origin, the taking of the medicine was of the nature of a sacrifice to appease the gods. The fact that not all of the materials used by primitive people are abhorrent is opposed to this view. Again, the belief in the efficacy of drugs may be attributed to the view which seems to have been held that since the supreme being created all things, including man, and sent the diseases to plague him, he must have created a remedy for every disease and left it to the ingenuity of man to discover the remedy. In the writings of the renowned Paracelsus [1] (1493-1541) occurs the statement: "Every disease has its medicine. For it is God's will that He be manifested in marvelous ways to the sick."

On the other hand, the belief in the efficacy of drugs, even in very early times, may have been based on observation and experience. Primitive man must have come in contact very early with strong pharmacologic agents, such as fruit juices, which, on being left exposed to the air, had fermented and yielded alcohol. He must have observed the effects of such materials. Similarly, among the plants, he must have found drugs which produced such remarkable effects that they would not escape the crudest observer. When he found substances which taken internally or placed on the skin produced decided effects on his body, nothing could have been more natural than for him to use such materials in treating injuries and illness in order to effect desirable changes within him. When illness plagued a man, he and his friends searched for a remedy as long as life lasted, and in the course of human history it is probable that almost every accessible material has been used in the treatment of disease.

1. Paracelsus: Die erste Defension, **1**: 253, quoted from Stillmann: Paracelsus, Chicago, The Open Court Publishing Company, 1920, p. 123.

The observations made on the action of the drugs in disease were crude and faulty, and no one knew what the course of the untreated disease would be, because all patients were given remedies. Yet, by this method, most valuable advances were made in the course of the ages. Thus, opium was in use before the Christian era, mercury was used in the treatment of syphilis in the sixteenth century, and cinchona bark, from which quinin is derived, was employed in the treatment of malaria in the seventeenth century. At the time of the Spanish conquest, the Indians of Peru were using coca leaves to assuage the pangs of thirst and hunger in their long journeys over the Andes. The action of the coca leaves, we now know, is due to the cocain which they contain, which acted partly as a local anesthetic and partly as a stimulant of the central nervous system.

The difficulty with this method was that it took many hundreds of years to advance the healing art with a definite contribution, and even then the value of the remedy in most cases was not actually proved, but was still a matter of opinion. Innumerable examples could be given to illustrate the increased value a drug possesses when its use passes from a haphazard to a scientific basis. We shall return to this subject later in this discussion.

Therapeutic investigation differs from most other types of work in that one cannot both treat an individual and leave him untreated excepting in certain diseases confined to the surface of the body. In other words we cannot divide an individual and treat half of him, and leave the other half untreated in order to determine definitely the effects of a drug under identical conditions. When we use different individuals, it is impossible to have conditions identical because two individuals may not respond in exactly the same way to a given disease or a given remedy, so that in all cases a therapeutic agent must be subjected to examination in a very large number of individuals under the best controlled conditions possible in order to get a final estimate of its therapeutic efficiency. Just as certain individuals may show an idiosyncrasy toward a drug and respond differently from the average of the same species, so there are certain differences in the response of different species to substances. The idiosyncrasy of certain species toward certain substances is well known and recognized. Apart from the remarkable variation in the response to drugs, noted in the case of certain species, there is a remarkable similarity in the response of the whole animal series toward drugs in general.

EFFECT OF VARIOUS DRUGS ON MAN AND ON ANIMALS

The statement is frequently made in antivivisection publications that man and animals are so dissimilar in

their reaction to drugs that no information of service in human medicine is derivable from studies of the action of drugs on animals. Such a statement has never been made or implied by any one having first hand knowledge of the subject. Let us examine the facts for a few of the most important drugs.

General and Local Anesthetics.—The most useful and safest general anesthetics for man are also the best and safest for the animals, and are in daily use whenever operations are performed on man or any of the higher animals. Can it be denied that the action of this group of substances on man and dog, for instance, is essentially identical? In the anesthetizing of the two, we employ the same agents and apparatus. Both pass through the same four stages under chloroform or ether, namely: (1) slightly impaired consciousness; (2) stage of excitement; (3) surgical anesthesia, and (4) toxic stage approaching death. The changes occurring in the circulation and respiration in chloroform and ether anesthesia are essentially the same in man and in dog. Similarly, the local anesthetics have the same effects in animals and in man. Thus, cocain placed in the eye of the dog or rabbit takes away the sensibility, and touching the eyeball no longer causes the animal to wink. All of the local anesthetics have been introduced through animal experimentation. For many types of operation in human surgery, they possess a great advantage over the general anesthetics.

TABLE 1.—MINIMAL FATAL DOSE OF STRYCHNIN

Animal	Mode of Administration	Minimal Fatal Dose per Kilogram Mg.
Rat	Subcutaneously	3.0
Frog	Subcutaneously	2.1
Mouse	Subcutaneously	1.3
Man	By mouth*	1.1
Ground squirrel	Subcutaneously	0.8
Rabbit	Subcutaneously	0.6
Cat	Subcutaneously	0.4
Dog	Subcutaneously	0.4

* It is probable that the fatal dose of strychnin for man by mouth is very nearly the same as it would be if given subcutaneously.

Soporifics (sleep-producing drugs).—The sleep-producing drugs for man act entirely similarly in the case of the higher animals. They produce sleep of a depth and duration depending on the dosage. As in man, an excessive dosage of these drugs will produce anesthesia. The soporific action of every member of this group of drugs was discovered by animal experimentation, and then used therapeutically.

Strychnin.—This substance acts essentially the same in the animal series from the frog to man. The drug in every case causes increased excitability of the spinal cord, so that ordinary sensory stimuli reaching the cord through the nerves carrying sensation cause convulsions which follow one another at intervals depending on the dose received and the rate of absorption. These convulsions in the frog, rabbit, dog or man can be produced by stimulating sensory nerves, and in the frog they can be largely prevented by cocainizing the skin. Cocain is absorbed through the intact skin of the frog. In treating strychnin poisoning in man, we apply the information gained through animal experimentation, largely with the frog; and although it is not practical to cocainize the entire surface of the body of a man, we keep the patient in a dark room free of all noise and vibrations, and protect him as far as possible from sensory stimulation.

The dose of strychnin for each kilogram of body weight necessary to kill many animals, including man, is known. The minimal fatal dose for the commoner forms is given in Table 1.

The minimal fatal dose of strychnin for man is arrived at through the many cases of murder, attempted murder, suicide and accident. Thus, not only the symptoms of strychnin poisoning, but also the fatal dose per unit of body weight is similar for man and the animals mentioned. So true is this that, in cases of poisoning, the toxicologist ordinarily tries the effect of the material isolated from the dead body on the frog—an important test in the identification of strychnin. The test is always recognized by the court. It is true that there are other species that are very much more resistant to strychnin than are man and the common test animals. Thus, the dose necessary to kill a snake is 23 mg. per kilogram, and for the bat, 40 mg. per kilogram. The amount of a substance that is required to kill an individual of one species may be much greater than for an individual of another species, and yet the type of action may be the same in the two cases. The fatal dose is only one of a number of important facts to be ascertained.

Atropin.—There are several instances in which the susceptibility of a particular species to a drug departs very far from that of the remainder of the animal series, and a case that is frequently referred to is the high degree of tolerance of the rabbit to atropa belladonna and the constituent atropin.

The action of atropin has been studied on certain beetles, amphibia (salamander, triton and others), the frog, guinea-pig, hedgehog, rat, rabbit, chicken, pigeon, dog and cat. Among the mammals, there is little difference in the symptoms produced, but marked differences in the dose required to produce similar effects. Man is the most sensitive creature to this drug; then in order come the carnivora and finally the herbivora. The rodents are particularly resistant to atropin.

Atropin and belladonna are very valuable drugs in human medicine. They are used:

1. To dilate the pupils for ophthalmoscopic examination and to prevent permanent damage in iritis.

2. To lessen vagal inhibition of the heart in certain cases of arrhythmia and to prevent reflex stoppage of the heart and death in certain conditions, such as in early chloroform anesthesia.

3. To reduce the secretory and motor activity of the stomach in gastric and duodenal ulcer, and to distinguish between pyloric occlusion of the stomach by spasm of the pylorus, which does not require operative procedure, and organic obstruction, which requires immediate surgical intervention.

4. To dilate the bronchoconstrictor muscles in asthma and in anaphylaxis and allied conditions, in which it may be life saving.

The first use mentioned did not require animal experimentation. The second use could never have been discovered except by animal experimentation, because without this method we should not have understood the function of the heart or the circulation, and therefore could not properly treat these conditions. The inhibitory action of the vagus nerve could not have been discovered, nor the action of atropin on it. The effect of atropin on the heart rate in the various species varies with the extent of vagal tone. The third and fourth uses of atropin could not have been discovered without animal experimentation. No one who is acquainted with the facts could doubt the immense value of animal

experiments in the elucidation of the proper therapeutic uses of atropin and belladonna in human and veterinary medicine.

Morphin.—Let us consider another case frequently referred to in antivivisection literature—namely, that the dog can hardly be killed by morphin. This statement is partly true. The fatal dose of morphin for the dog is about thirty times larger than that for man; yet, the action of morphin on man and dog is strikingly similar on the higher centers of the central nervous system. The fatal dose of a drug does not constitute the entire knowledge of the action of a drug, nor is it the most important factor, as these writers seem to think. In physiologic laboratories, general anesthesia is usually preceded by a liberal dose of morphin to relieve the dog of the stage of anxiety and excitement when going under the anesthetic. Every laboratory man, therefore, has had ample opportunity to observe the action of morphin on the dog. The dog under a 1 grain dose passes into a condition of lazy lethargy remarkably similar to that seen in man.

A striking characteristic of morphin as a pharmacologic agent is the fact that man readily develops the morphin habit, and at the same time develops a tolerance for the drug so that a dose many times as large as the ordinary dose may be taken without producing a greater effect than the original dose. Exactly the same holds for the dog. The nature of morphin habituation and tolerance has been studied in the dog, and Faust [2] found that dogs behave in a manner remarkably similar to man under these conditions. Through this work on dogs, it has been found that morphin tolerance depends largely on the fact that repeated administration of the drug results in the developing by the body of increased power of destroying the drug. It is obvious, therefore, that dog and man react remarkably alike to morphin.

The Anthelmintics.—The drugs used against intestinal parasites, although the most logical for the antivivisectionist to attack, have been particularly free from their condemnation. Here we purposely select a drug for the sole purpose of killing or stunning an animal and driving him out of his natural home and habitat into outer coldness and an environment where he must necessarily die from starvation and neglect! Our conduct becomes the more reprehensible when we recall how completely these poor creatures are dependent on man and how attached they become to him, never voluntarily deserting him, no matter how dangerous or disagreeable a position he may occupy. Will the antivivisectionist here also claim that animal experimentation is of no avail? Do studies of the toxicity of anthelmintics on worms mean nothing? These are animal experiments. Owing to the lack of available material for work in this field at all times, Dr. Torald Sollmann has suggested and used earthworms as test objects.

The same anthelmintics are used in the similar infections in man and in the higher animals with equal success. For example, santonin is used in infections with *Ascaris lumbricoides* (roundworm) in both man and pig. In the field of anthelmintics, animal experimentation is essential for two reasons: to determine the toxicity of the drug (*a*) to the worm and (*b*) to the host. This yields us the "therapeutic index" of the drug.

The Digitalis Group.—In considering the debt of human medicine to animal experimentation in connection with all the drugs acting on the circulation, we must begin by stating that without animal experimentation we would not know the function of the heart. We would think, as people thought before Harvey's work (1628), that the arteries were filled with air and that the blood ebbed and flowed in the veins. It was through animal experimentation that we obtained correct and detailed knowledge regarding the normal circulation, and of course without such knowledge the efficient treatment of diseases of the heart and blood vessels would be out of the question.

In view of these facts, it seems hardly necessary to discuss in detail the debt of medicine to animal experimentation in connection with the important drugs acting on this system. It may be stated, however, that practically all of our knowledge of the action of all drugs affecting the circulation was obtained first through animal experimentation. It is inconceivable that we could ever have obtained a correct knowledge of the action of digitalis without resorting to this method of study. The life-saving action of digitalis in organic heart disease is one of the most striking instances of the efficacy of drugs in medicine.

The Nitrites.—The action of the nitrite series on the circulation was discovered through animal experimentation, and then applied to human medicine. The remarkable relief of an attack of angina pectoris by amyl nitrite, discovered by Sir T. Lauder Brunton, himself an eminent experimenter, will always remain as a brilliant therapeutic achievement. The discovery was based directly on animal experimentation. The same applies to epinephrin, the active principle of the suprarenal gland, used locally to stop hemorrhage, in certain types of shock, and to relieve attacks of asthma.

The Antiseptics.—In considering the group of antiseptic drugs, we must bear in mind that the relation of bacteria to disease would have remained unknown except for animal experimentation; and since the antiseptics are used to prevent the growth of bacteria or to kill them, we cannot conceive of the rational development of this type of drug without knowing anything of bacteriology.

A champion of the antivivisection cause, W. R. Hadwen, who has been addressing antivivisection societies in this country, has made a large number of statements regarding the use of antiseptics. There occur such statements in his addresses as the following: "I am positive that before another decade has rolled by, instead of germs being looked upon as our worst enemies, they will be looked upon as the best friends we have." In spite of his professed feelings of friendship for these germs, he objects to their being injected into man, even when their efficacy as vaccines is proved. He refers to them in other places as filth. He speaks most scornfully of the antiseptics in one place when their use was proposed by medical men through animal experimentation, but lauds their empiric use by Semmelweis because he thought that the great contribution of Semmelweis was in no wise connected with animal experimentation. As a matter of fact, Semmelweis did do animal experimentation.

The death rate of women in the Lying-In Clinic in Vienna dropped from 11.4 per cent. in May, 1847, to 1.27 per cent. the year following the practice of disinfecting the hands with chlorinated lime. A breach of technic on the part of a student, with an attendant rise of mortality to 5.25 per cent., demonstrated by human experimentation the efficacy of the antiseptic. On

2. Faust, E. S.: Arch. f. exper. Path. u. Pharmakol. **44**: 217, 1900.

account of these terrible experiments on human beings, Semmelweis declined to do further animal experiments, as he regarded the result of this breach of technic as a conclusive demonstration. Certain prominent antivivisectionists writing for their cause seem to approve heartily of this terrible sacrifice of human life in the Vienna Lying-In Clinic to establish a point which could have been proved readily by a few animal experiments.

In other words, when antiseptics are introduced by Semmelweis through human experimentation, the antivivisectionist is in favor of them; but when they are introduced by Lister and Carrel on the basis of Pasteur's work and all those who founded the science of bacteriology through animal experimentation, he scorns their use. The same champion of antivivisection referred to above quotes the statement from Capt. J. Stanley Arthur, that "chlorin gas had solved the problem of a pure water supply on a large scale for the troops, and accounted for the fact that there was no epidemic of typhoid or other water-borne disease which caused such havoc in the South African campaign." He uses this in his tirade against typhoid vaccine. Apparently, the gentleman does not know that chlorin in purifying water acts as an antiseptic, killing the bacteria causing the water-borne disease, and that the amount required and the results are controlled entirely by bacteriologic methods.

SIMILAR REACTION OF ANIMALS AND MAN

The statements made in antivivisection literature that the animals react entirely differently from the human being to drugs is further refuted by three outstanding facts:

1. Canary birds are used by miners the world over for the detection of the gas known as carbon monoxid. This substance is a very poisonous gas which combines with the red coloring matter of the blood—hemoglobin—and replaces the oxygen carried by this pigment, forming carbon monoxid hemoglobin. This robs the blood of its most urgent function—the carrying of oxygen from the lungs to the tissues—and results in death when the blood is about 80 per cent. saturated with the gas. This gas is present in many mines, and active ventilation of the mines is required to keep the concentration down below the danger point. All the higher animals have hemoglobin in their blood and react to carbon monoxid in precisely the same way that man does. All animals below the vertebrates, which do not depend on hemoglobin for the transport of oxygen, are totally unaffected by the gas. Birds, because of the large volume of air breathed per unit of body weight, and because of their small size and small blood volume, become affected by carbon monoxid before man, and when the miner observes that his canary bird is lying down instead of perched up as normally, he realizes that the air is not suitable for the support of life and he makes a hasty exit for clear air. If he reaches wholesome air in time, the bird revives—if not, the bird dies. Would the antivivisectionist deny the miner this security which animal experimentation has given him in order to protect the bird against the possibility of death by asphyxiation?

The mouse was formerly used as an indicator for carbon monoxid, but the difference in the attitude of a normal mouse and one suffering distress is not so readily observable as in the case of the bird. This use of animals would be obviously impossible if animals and man responded utterly differently to chemicals, whether drugs, which in proper dosage are useful in the restoration of health, or poisons.

2. Before the rise of toxicology, which made the detection of poisoning almost certain, people lived in dread of being poisoned by their enemies. This dread was particularly pronounced among important personages, the royal families, and persons prominent in the affairs of church and state. It was then a common practice to have the cooks or servants first partake of the food, and frequently the food was fed to animals when there was reason for believing that it might contain poison. Instances of the recognition of the similarity in the action of food and poisons on man and on animals are found in ordinary literature.

In "The Swiss Family Robinson" we find, the statement, "As a rule we may consider any kind of vegetable or fruit eaten by birds or monkeys as wholesome"; and, again, the father of the family suggests that the edibility of the figs be tested on the pet monkey before eating them. This book, by a medical layman, which breathes a spirit of kindness to animals, therefore suggests the use of animal tests in determining the action of unknown materials on man, and represents the opinion which would be given by any layman with common sense.

Similarly, the toxicologist of today, when searching for an unknown poison in a dead body, administers a small amount of the supposedly toxic material to a small frog in order to determine the presence or absence of any poison in it.

3. If any final proof were needed that drugs act very similarly on man and the higher animals, it is furnished by the fact that many drugs are standardized by biologic methods—i. e., testing on animals. The active principles of certain important drugs cannot be quantitatively determined by chemical means with the desired accuracy. The most important instances are the drugs of the digitalis series, the drugs acting on the uterus, and antitoxins, vaccines and serums.

The digitalis drugs are used in the later stages of organic heart disease, often prolonging the patient's life and enabling him to return to the ordinary duties and pleasures of life. When this drug is administered, the physician must know that the particular specimen is not inert, that it has the power to do that which is expected of it, and finally what dose of the particular preparation is required. This can be ascertained only by experiments on animals or by its use at the bedside when human life lies in the balance, with the family watching the experiment and the fate of the family at stake.

The action of digitalis on the frog and on the cat is sufficiently like its action on man to enable us to determine its potency as a cardiac drug and to determine its dosage. In the frog, the digitalis bodies act also on the muscle of the heart, increasing the contractions, and by determining the amount required to bring the heart of a 20 gm. frog to systolic standstill in exactly one hour, we learn the potency of the drug for man also.

Ergot and pituitary extract are used to prevent hemorrhage following childbirth. Not infrequently following delivery, the uterus fails to contract and remains flabby and dilated, and severe bleeding results. The two drugs that are most used to bring about contraction of the uterine muscle, thereby constricting the blood vessels and stopping hemorrhage, are ergot and extract of the posterior lobe of the pituitary gland. Here also the active principles cannot be quantitatively

determined chemically, and again we are forced to resort to biologic testing. In this case, the best test object is the uterus of the virginal guinea-pig. The action on the uterus of the guinea-pig is the same as on the human uterus—the drug causes contractions of the uterine wall. Surely, the antivivisectionists would not have us determine the potency of the drug on the young mother, nor would they take the responsibility for the loss to the husband and new-born for the ebbing away of the mother's life because the preparation of the drug was inert. The same conditions obtain in determining the potency of diphtheria antitoxin and other antitoxins. Here, again, in the absence of animal experimentation we should have to determine whether or not the antitoxin was active on the child sick with diphtheria. How many persons would consider such a procedure in the case of their own child?

With this evidence, the reader may decide whether the effects of drugs on animals and man are so utterly dissimilar as to render such studies useless. In the light of these facts, consider for a moment the responsibility which the antivivisectionist assumes toward you and me and all mankind in urging the abolition of animal experimentation.

GENERAL CONSIDERATIONS REGARDING DRUGS AND ANIMAL EXPERIMENTATION

In order to give a more general picture of the importance of animal experimentation to the science of pharmacology, a few of the fundamentals of the subject which have been established may be briefly referred to.

Pharmacology is that phase of biologic science which deals with the action of chemicals or mixtures of chemicals on living things. It is therefore a fundamental branch of medical science, and is an important study in every medical curriculum. In its relation to medicine it deals largely with substances that are useful in human therapy. In its relation to veterinary medicine, emphasis is laid on drugs and poisons important from the point of view of that subject.

Pharmacology has largely furnished the basis for the scientific use of drugs in the curing of diseased conditions, the alleviation and prevention of pain, and the prolongation of life. These are the basic problems with which it deals. As a by-product, pharmacologic work often leads to important contributions in the field of normal function; i. e., physiology. Again, pharmacologic work often leads to important advances in pathologic physiology, and thereby elucidates the subject of functional derangements in disease. The subject includes structural changes in the body as a result of chemical agencies, chemical changes in the drug as a result of its passage through the body, and the relation of chemical constitution of drugs to pharmacologic action. The term "pharmacology" is sometimes used in a somewhat narrower sense by restricting it to the alteration of function by chemical means. In the treatment of disease by drugs, we are concerned with the alteration of abnormal function by chemical means.

The cells of our bodies are bathed in a fluid—lymph—derived from the blood and tissues, which insures a free interchange of material between blood and tissues. The body cells of the higher animals live in a fluid medium as truly as do single-celled forms which live in the ocean. All animal experimentation shows that life depends on the maintenance of a certain physical and chemical environment. The administration of any drug that brings about a change in the functional activity of the cell must do so in consequence of a change in the chemical environment of the cell. In order to understand this change it is necessary to understand the normal chemical environment of the cells of our body. The body of facts concerning the normal chemical environment constitutes the subject of physiologic chemistry.

Changes in the chemical environment of the cells of the body are of two types: (1) negative and (2) positive, the two being equally definite. A negative change in the chemical environment is brought about by a reduction of dosage or entire withdrawal of something that has become a factor in the chemical environment and therefore a substance to which the cell has become accustomed. Thus, a decrease in the supply of oxygen causes striking symptoms or even death. The withholding of food from the animal, the withholding of cocain, morphin, alcohol, coffee and tobacco from the body habituated to these drugs, or the withholding of the vitamins from the diet are all instances of a negative change in the chemical environment which brings about more or less striking changes in the functional activity of the cells.

A positive change in the chemical environment results every time an active drug is administered. The administration of a definite dose of a drug may produce changes in the functional activity of different intensity according to the mode of administration. The intensity of action of a drug depends on the concentration in which it reaches the particular cells on which it acts, and the duration of time that this concentration is maintained. The concentration which a drug reaches in the body is a function of two factors: (1) the rate of absorption, and (2) the rate of its removal from the body. Drugs are removed from the body by two general methods: (*a*) excretion, and (*b*) chemical destruction in the body.

Thus, a drug administered by mouth is usually absorbed more slowly than if administered subcutaneously or intravenously, and in this case the intensity of action is determined by the rate of absorption. If the rate of absorption drops below the rate of removal, the drug has no effect in the body because a sufficient concentration is not obtained. Therefore, it is very important for us to know the rate of absorption of drugs when administered by any of these routes. None of this information applicable to all cases of drug action could have been obtained without animal experimentation. The very rudiments of the subject could not have been elucidated.

Starting about thirty years ago and lasting for a period of ten or fifteen years, there was a general state of mind among physicians that there were few drugs valuable in the treatment of disease. This period of drug nihilism served a most useful purpose because the existing knowledge of the use of drugs, many of which had been handed down through the ages, was unreliable and there was a sort of blind confidence in the efficacy of drugs which resulted of necessity in disappointment when they were critically used. Within the last fifteen or twenty years, there has been great progress made in the treatment of disease. The increase in the amount of animal experimentation has placed the use of drugs on a much firmer basis. Nearly all valuable new drugs have been introduced by the route of animal experimentation, the only noteworthy exception being chaulmoogra oil, the use of which in leprosy was determined in human beings without preliminary

animal experimentation because leprosy is a disease which cannot be given to animals. The latter fact is probably responsible for the great delay in finding adequate treatment for the disease.

Animal experimentation has resulted in increasing the usefulness of old drugs. It has also been extremely useful in discarding drugs that are useless and in clearly defining types of cases in which a given drug is indicated and may be of service. The result of all the work that has been done is that drugs are used today in a much more scientific way than formerly, and drugs are not expected to accomplish what is impossible. Thus, in degenerative diseases in the course of which specialized tissue has actually disappeared as a result of disease processes and has been replaced with inactive scar tissue, and when such loss of tissue produces symptoms, it is vain to hope to restore the lost tissues by drugs. The use of drugs in such conditions is as futile as would be an attempt to cure a wooden leg or a glass eye, by drugs. The proper use of medicines, therefore, presupposes an accurate knowledge of the pathology of the disease, in regard to structural changes both in the tissues and in their function.

TABLE 2.—CURATIVE DRUGS

Drug	Disease
Quinin	Malaria
Mercury	Syphilis
Arsphenamin	Syphilis
Neoarsphenamin	Syphilis
Arsanilic acid	Trypanosomiasis
Chaulmoogra oil	Leprosy
Emetin	Amebic infestation
Oil of chenopodium	Hookworm infestation
Thymol	Hookworm infestation
Santonin	Roundworm (Ascaris lumbricoides) infestation
Pelletierin	Tapeworm infestation
Thyroid gland (thyroxin)	Cretinism, myxedema and milder forms of hypothyroidism
Diphtheria antitoxin	Diphtheria

Let us take up a single instance of how animal experimentation has greatly improved the therapeutic use of old drugs. Digitalis was introduced into medicine by Dr. William Withering in 1785 for the treatment of dropsy. Clinicians at various times urged its use in various conditions, a partial list of which would include apoplexy, rapid pulse, inaccessible hemorrhage, tuberculosis, tuberculous hemorrhage, inflammatory fever, malaria, neuralgia, epilepsy, hemicrania, general paresis, delirium tremens, menorrhagia, uterine atony and typhoid fever.

Digitalis was in general use for seventy-five years before its action was studied by the method of animal experimentation. In spite of all these years of clinical use, the views held by medical men regarding its action were in many important respects entirely erroneous, and its field of therapeutic usefulness was not clearly defined, as the list of conditions in which it was recommended clearly indicates. Thus, in 1860, Clarus [3] stated that digitalis slows and weakens the heart. Animal experimentation with this drug started about this time, and as a result the therapeutic use of digitalis now is strictly limited to the condition in which it can definitely be proved that it is of service—namely, to relieve or prevent decompensation in heart disease and to relieve acute cardiac breakdown. The drug greatly strengthens contractions of the heart muscle. This we know by direct observation, and this knowledge could not have been reached without animal experimentation. In the other conditions its use has been virtually abandoned.

3. Clarus: Handbuch der speciellen Arzneimittellehre, 1860.

In the same manner, many useless drugs have been eliminated, and the sphere of usefulness of many worth-while drugs has been accurately defined so that positive proof exists of their usefulness, each in its own field.

PURPOSES OF DRUGS

Drugs are used in medicine for four main purposes: (1) to cure; (2) to relieve; (3) to diagnose, and (4) to prevent disease.

The curative drugs actually remove the cause of the disease. They are sometimes referred to as specific drugs. A list of the best recognized curative drugs is given in Table 2.

The palliative drugs are used to relieve symptoms of disease and often thereby prolong life. The most important of this group of drugs are given in Table 3.

The drugs used to relieve or to prevent pain include the general and local anesthetics, opium, morphin, codein, scopolamin and analgesics of the acetanilid-acetylsalicylic acid groups.

Drugs used to meet special emergencies include ergot and preparations of the pituitary gland, to prevent hemorrhage following childbirth, and iron salts, to cause a rapid regeneration of blood in chlorosis and secondary anemia.

Drugs used for diagnostic purposes include tuberculin, principally in veterinary medicine; phenolsulphonephthalein, in tests for kidney efficiency; atropin sulphate, in cardiac arrhythmias and functional spasm of the pylorus, and several others used less frequently.

Drugs used to prevent disease include the iodids, to prevent the development of goiter; tetanus antitoxin, to prevent lock-jaw; diphtheria antitoxin, to prevent diphtheria, and vaccinations, to prevent smallpox, typhoid fever, etc.

In many instances the use of the palliative drugs saves life by tiding over a crisis and enabling the natural forces tending to restore the normal to become operative.

TABLE 3.—PALLIATIVE DRUGS

Drug	Most Important Uses
Digitalis group	Decompensated heart disease
Purgatives	Constipation, to rid body of excess of fluid
Camphor	Cardiac embarrassment
Epinephrin	Shock, hemorrhage, asthma
Nitrites	Especially amyl nitrite in angina pectoris
Diuretics	To increase secretion of urine
Arsenous oxid	Pernicious anemia
Glucose	To prevent acidosis
Soporifics	To promote sleep; in certain types of convulsions
Atropin	To prevent vagal stoppage of heart; decrease secretions; relax bronchioles; mydriatic
Strychnin	To stimulate respiratory center
Bromids	Epilepsy
Phenobarbital	Epilepsy

The great clinician Sydenham said, "Without opium few would be callous enough to practice therapeutics." It is essential that the physician be able to control pain, since pain is most exhausting. The recent work on shock has emphasized that severe pain itself is inimical to the return of the normal state.

RÔLE OF ANIMAL EXPERIMENTATION IN THE INTRODUCTION OF A NEW DRUG

The rôle of animal experimentation in the introduction of a new drug into human or veterinary medicine should be presented. In order to have a concrete example before us we shall take a new arsenical drug which some investigator conceives will be a better drug than any known in the treatment of syphilis. Let us begin

with Ehrlich's drug arsphenamin, which was introduced about 1910, in the treatment of syphilis.

Ehrlich started out with the information that an organic arsenical compound known as atoxyl is useful in the treatment of diseases caused by trypanosomes, such as trypanosomiasis (South African sleeping sickness). The trypanosomes are biologically closely related to *Spirochaeta pallida,* which is the infectious organism in syphilis. Trypanosomiasis is virtually always fatal if untreated. Atoxyl possesses certain disadvantages, however, in that in certain cases it causes impairment of vision or even blindness. Ehrlich found that atoxyl has no action on the organisms in question when they are exposed to the drug in the test tube. In the infected animals (rats, mice and fowl), the drug has a definite destructive action on the parasites.

Ehrlich and his colleagues then began to make a series of chemical derivatives of atoxyl, producing in all nearly a thousand substances. The six hundred and sixth substance, known as arsphenamin, had outstanding value in the treatment of animals experimentally infected with syphilis (rabbit), trypanosomiasis (rat and mouse) and spirillosis (fowl). The next point which had to be elucidated by Ehrlich and his coworkers was the so-called therapeutic index; namely, the ratio of the curative dose to the maximal tolerated dose. For a drug to be useful in medicine there must be a sufficient margin of safety between the dosage which will be beneficial and that which will do harm. This ratio again must be worked out on animals. Following this part of the study, the toxic dose of the drug is determined in a series of animals—rabbit, guinea-pig, white rat and white mouse. The data thus obtained enable one to arrive at the surely safe dose which may be used in the first studies in human therapy. The pathologic changes in the tissues produced by toxic but nonfatal doses of the drug in animals must next be studied in order to determine the point of attack of the drug in the body so that in the first cases of therapeutic use in which it is studied we shall know exactly what type of symptoms to look for if the drug exercises any toxic effects. Some drugs in toxic doses manifest their first effects on the circulation, others on the nervous system, the skin, digestive organs, or the kidneys, etc.

In this manner we may focus our attention in the early therapeutic study in man on the organs likely to be attacked, and by appropriate tests detect the very earliest sign of any deleterious effect. In this way a drug may be excluded in human medicine if it is too dangerous—that is, if there is not a sufficient margin of safety between the therapeutic and toxic dosages without injuring a single individual. Without the preliminary animal experimentation it would be impossible to know where a drug would act or what drugs were worthy of study in human or veterinary medicine. No man who had the proper feeling toward his fellows could be induced to make such a study at the present time without the information to be obtained by animal experimentation.

The statement is frequently made in antivivisection literature that "the last experiment must always be on man." The foreknowledge gained from animal experimentation is of as much value as are the laboratory tests made to determine the strength of new materials used in the construction of a bridge. The final experiment is made when the bridge is built and in use; the preliminary tests must be made in the laboratory to learn the strength of the materials and whether there is any probability of success. No engineer would think of using untested new materials. Surely those opposed to animal experimentation would hesitate to recommend that tests of new drugs be made on the human being without previous trials on the lower animals.

With all of this preliminary information, animal experiments would still have to be done to determine the chronicity of the lesions produced by a toxic dose of the new arsenical drug in order to know what period of time should elapse before repeating a dose for therapeutic effects. It is essential that the repetition of doses be spaced so that there will be no accumulation of toxic effects. Finally, after a drug has been successfully introduced, it is necessary in the case of arsenicals to control each batch of the manufactured product to make sure that every step in the process is properly controlled. Therefore, the toxicity must be tested on animals, or human life would occasionally be sacrificed.

It is variously estimated that from 5 to 10 per cent. of the population have syphilis. This disease menaces the next generation, and it is of inestimable importance to control its ravages. There is no field of medicine in which animal experimentation is more important for progress or in which the results have conferred greater benefits on man. The future in this line of endeavor holds even greater promise that this scourge will be conquered.

It should always be borne in mind that some of the greatest discoveries in therapeutics are the outcome of pure research undertaken with the thought of increasing the bounds of biologic knowledge but without the thought of immediate application; but this is not always the case.

Sir T. Lauder Brunton,[4] an eminent physician and an ardent animal experimenter, wrote, in 1867: "Few things are more distressing to a physician than to stand beside a suffering patient who is anxiously looking to him for that relief from pain which he feels himself utterly unable to afford. His sympathy for the sufferer, and the regret he feels for the impotence of his art, engrave the picture indelibly on his mind, and serve as a constant and urgent stimulus in his search after the causes of the pain, and the means by which it may be alleviated." Brunton had in mind the patient suffering from angina pectoris, an agonizingly painful disease of the heart, and he introduced the use of amyl nitrite, which often affords magical relief. The introduction of this drug by Brunton was the direct result of animal experimentation. Similarly, the observation of human suffering at the bedside and the depth of sympathy felt by the physician is often the direct stimulus for investigation involving animals. The physician's sympathy in these cases does not take the idle form of such phrases as, "Too bad; I am sorry, but we must save the guinea-pigs." He leaves the bedside with the determination to be able to control the next such situation which arises, and to bestow the blessings of relief for which his profession stands. He knows full well that to accomplish his purposes means energy, hard work, ingenuity, ability to stand up under disappointments, financial loss and self sacrifice. All these obstacles he is ready to face; they are inevitable, and he knows it. But there is a form of obstruction which he ought not to have to encounter. It is the opposition of persons who are either fanatical or misinformed on the subject of animal experimentation.

4. Brunton, T. L.: Lancet, July 27, 1867.

Among the former one often sees individuals with an excess of money and leisure and no legitimate outlet for their energies, who either have no conception of the mass suffering of the race, or are totally callous to it, who seek to interfere with his noble purpose and to revile him, his methods, and his purposes, to the uninformed public through falsehood and calumny. Attempts to convince such persons of the legitimacy and propriety of animal experimentation have been and probably always will be fruitless; but, as already intimated, there are other individuals who have taken this matter up largely because of the misrepresentations perpetrated by their fanatical colleagues. It is to this misinformed class and to the uninformed public that the experimenter must appeal, and in so doing he feels that their intelligence and rational philanthropy will be ready to meet him half way and result in a complete understanding.

Forget for a moment that the methods of animal experimentation have given us practically all of our knowledge of physiology and hygiene, the science of bacteriology, aseptic surgery and local anesthesia, and have greatly contributed to the knowledge and safety of general anesthesia, and the proper use of most of our drugs. In brief, let us suppose that the methods of animal experimentation had not added immensely to our knowledge of human and veterinary medicine and practically rid the world of Asiatic cholera, yellow fever, bubonic plague and many terrible epidemic diseases affecting animals. On this supposition, let us imagine that a physician sees a patient suffering with general paresis resulting from an accidental and innocent infection with syphilis years previously. He knows that the mental impairment if untreated will be permanent, that the family will lose a valuable member and will be stigmatized by having a member die in a hospital for the insane, and that the marriageability of sons and daughters will be interfered with. Suppose this physician begins an investigation involving animals in the determination to find a way of treating or preventing the development of this disease, believing that animal experimentation had never up to that time accomplished anything. Should he be helped or hindered in his work? Let those who suffer answer; or, if they cannot, let those who see them and render all aid within their knowledge answer for them. But do not allow the answer to be given by those who are ignorant and refuse to be informed, and who lead such happy lives that they never come in contact with anything more pitiable than a dumb animal. Their opponents see poignant human suffering all the day and every day. The ideal and logical solution would be to let each group turn its attention to the relief of the type of suffering that it sees. The medical experimenter is unalterably opposed to wanton cruelty wherever found, and will lend moral and financial support to any movement directed against it. The only conflict that exists is that those in favor of animal experimentation demand that the lives of a few animals may be sacrificed in the most humane manner possible for the benefit of the human race and the remainder of the animal world. The proposition may be briefly stated in this way: Every new drug must have its first trial. Shall this first trial be on man or on animals? Each must answer this question for himself; but the answer must be made with the full knowledge that drugs act very similarly on man and on animals.

INTRACUTANEOUS REACTIONS IN PERTUSSIS

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During the last four years, several epidemics of pertussis have occurred in a large institution for the care of children harboring about 400, ranging in age from 1 day to 6 years. The opportunity was thus afforded us to study the disease with special reference to (*a*) natural immunity, (*b*) acquired immunity, and (*c*) the diagnosis of the disease in its earliest stages, and before the onset of the characteristic spasmodic cough, whoop and vomiting.

Children exposed in previous epidemics and not acquiring the disease were considered as possessing a natural immunity. Other children giving a history of having had the disease before admission, or having had an attack of pertussis while in the institution, were grouped as those possessing an acquired immunity.

To possess a method whereby it would be possible to designate a child as having a natural or acquired immunity, and to be able to diagnose pertussis in its earliest stages would be an invaluable addition to our control of the disease: its epidemiology and therapeusis.

In our study we employed various preparations of the Bordet-Gengou bacillus, injected intracutaneously. The specific reaction obtained by Schick [1] with diphtheria toxin was taken as our standard of comparison.

The injections were made into the upper part of the flexor surface of the forearm. Two minims was injected intracutaneously. Separate needles and syringes were used for the control and the solutions. The controls consisted of physiologic sodium chlorid solution, this solution plus preservatives, or broth and ascitic fluid, as used in the various test solutions. No reaction was read before forty-eight hours had elapsed, thus eliminating the element of error (pseudoreactions). All reactions were considered positive that were found to be present at forty-eight hours and persisting for seventy-two, and in most cases ninety-six hours. The size of the reactions varied from 5 mm. to more than 1 cm. in diameter. Induration was usually present, and many of the reactions were sharply defined. They were red, and the color persisted for about four days, gradually fading. Peeling often closed the reaction. No constitutional disturbances accompanied the injections.

TABLE 1.—REACTIONS TO PERTUSSIS VACCINE, EIGHT BILLION TO EACH CUBIC CENTIMETER, IN EPIDEMIC OF 1918

Number of children injected	164		Control
Number of children injected, with natural immunity and exposed at time of injection (no history of pertussis)	77	Pos. 42 Neg. 35	Pos. 0 Neg. 77
Number of children injected, with acquired immunity and exposed at time of injection (history of pertussis)	35	Pos. 23 Neg. 12	Pos. 0 Neg. 35
Number of children injected, ill with pertussis at time of injection	52	Pos. 52 Neg. 0	Pos. 0 Neg. 52
Number of children originally negative, later positive with onset of the disease	26		
Number of children originally positive, later increased positive with onset of the disease.	10		

In the epidemic occurring in 1918, we used pertussis vaccine. The strength of the injected material was 8 billion to each cubic centimeter.

1. Schick: München. med. Wchnschr. **9**: 2608-2610, 1913.

A close scrutiny of Table 1 will disclose that the contradictory reactions rule out the specificity of the injected material. Although all children ill with pertussis gave a positive reaction, twenty-six of them had shown a negative reaction at a previous injection. All retest cases became positive at the second injection (sensitization?)

In the epidemic occurring in the following year, a weaker solution was employed. It was thought that the large number of positive reactions obtained with the stronger vaccines might be interpreted as protein reactions.

In a study of Tables 2 and 3 it will be seen that the number of negative reactions increased as the strength (in protein) of the test solutions became less.

TABLE 2.—REACTIONS TO PERTUSSIS VACCINE, TWO BILLION TO EACH CUBIC CENTIMETER, IN EPIDEMIC OF 1919

			Control
Number of children injected	61		
Number of children injected, with natural immunity, and exposed at time of injection (no history of pertussis)	23	Pos. 19 Neg. 4	Pos. 0 Neg. 23
Number of children injected, ill with pertussis at time of injection	38	Pos. 30 Neg. 8	Pos. 0 Neg. 38

No retest injections made in this group.

TABLE 3.—REACTIONS TO PERTUSSIS VACCINE, FOUR, EIGHT, SIXTEEN AND THIRTY-TWO MILLION, IN EPIDEMIC OF 1919

			Control
Number of children injected	20		
Number of children injected, with natural immunity	6	Pos. 0 Neg. 6	Pos. 0 Neg. 6
Number of children injected, ill with pertussis at time of injection	14	Pos. 0 Neg. 14	Pos. 0 Neg. 14

No retest injections made in this group.

In the Schick test we have important factors entirely wanting in the materials used in Tables 1, 2 and 3. Schick, working with a toxin liberated by the diphtheria bacillus, was able to use a substance whose dosage could be accurately gaged. There is no proof at hand that the Bordet-Gengou bacillus liberates an exotoxin, although it is true that living Bordet-Gengou bacilli injected intraperitoneally into guinea-pigs have proved fatal, when grown under certain cultural conditions.

Our problem then confined itself to obtaining a substance produced by the Bordet-Gengou bacillus under the same conditions as those existing in the preparation of diphtheria toxin. Through the courtesy of Dr. Olga Povitzky of the New York board of heatlh, so-called pertussis "toxin" was prepared. Bordet-Gengou bacilli were grown in broth with ascitic fluid, and the filtrate

TABLE 4.—REACTIONS TO PERTUSSIS "TOXIN"

			Control
Number of children injected	27		
Number of children injected, with natural immunity and exposed at time of injection (no history of pertussis)	8	Pos. 5 Neg. 3	Pos. 2 Neg. 6
Number of children injected, with acquired immunity and exposed at time of injection (history of pertussis)	9	Pos. 5 Neg. 4	Pos. 1 Neg. 8
Number of children injected, ill with pertussis at time of injection	10	Pos. 8 Neg. 2	Pos. 3 Neg. 7

No retests were made in this group.

was used. Large quantities of this filtrate injected into mice did not prove fatal.

Antigen extracts as described by Povitzky[2] were used in the epidemic occurring this year. This substance was prepared by scraping a forty-eight-hour growth of *Bacillus pertussis* on coagulated horse blood-veal-agar medium into distilled water, shaken for two successive days, brought up in the water bath to 56 C.,

TABLE 5.—REACTIONS TO PERTUSSIS ANTIGEN

			Control
Number of children injected	104		
Number of children injected, with natural immunity and exposed at time of injection	43	Pos. 10 Neg. 33	Pos. 0 Neg. 43
Number of children having pertussis at time of injection	61	Pos. 34 Neg. 27	Pos. 0 Neg. 61

No retests were made in this group.

and left in the incubator at the same temperature over night; the next day the emulsion was centrifuged and the supernatant fluid rendered isotonic by adding 9 per cent. of salt.

The reactions in Table 5 most resembled in size, shape and color the positive Schick reaction. A greater number of positive reactions were obtained during the early stages of disease. Further studies will be carried out with various concentrations of pertussis antigen.

Orgel,[3] following the work done by Modigliani and de Villa,[4] obtained a seeming specificity of reaction by the intracutaneous injection of *Bacillus pertussis* vaccine containing 2 billion bacilli to each cubic centi-

TABLE 6.—REACTIONS TO PERTUSSIS VACCINE (AUTOLYZED), TWO BILLION TO EACH CUBIC CENTIMETER

Number of children injected, ill with pertussis	26	Pos. 20 Neg. 6
Number of children injected, having an acquired immunity	6	Pos. 6 Neg. 0
Number of children injected, with natural immunity, exposed at time of injection	21	Pos. 18 Neg. 3
Healthy children not exposed at time of injection	7	Pos. 7 Neg. 0
Saline control in all cases		Pos. 6 Neg. 54

TABLE 7.—REACTIONS TO STAPHYLOCOCCUS VACCINE (AUTOLYZED), TWO BILLION TO EACH CUBIC CENTIMETER

Number of children injected, ill with pertussis	24	Pos. 20 Neg. 4
Number of children injected, with acquired immunity	5	Pos. 5 Neg. 0
Number of children injected, with natural immunity	3	Pos. 3 Neg. 0
Healthy children injected and not exposed to the disease	7	Pos. 7 Neg. 0

meter. Modigliani and de Villa used a solution of *Bacillus pertussis* in distilled sterile water (one platinum loop to each cubic centimeter of water) incubated at 37 C. for forty-eight hours. As a control, autolyzed *Bacillus coli* was used. In fifty-eight immune children there were no positive reactions with either the test solution or the control. In thirty-eight children ill with pertussis, all reacted positively; controls were negative. They describe the positive reaction as a papule which usually disappears in twenty-four hours. The intensity of the reaction was greatest in the early stages of the disease. Our reactions, as shown in Tables 6 and 7, do not confirm their results.

Sixty cases tested with pertussis vaccine gave fifty-three positive and seven negative reactions. Thirty-

2. Povitzky, Olga R.: Agglutination in Pertussis, Arch. Int. Med. **17**: 279-292 (Feb.) 1916.

3. Orgel, S. Z.: A Method for the Early Diagnosis of Pertussis, J. A. M. A. **79**: 1508-1509 (Oct. 28) 1922.

4. Modigliani, E., and De Villa, S.: The Intracutaneous Reaction for the Early Diagnosis of Pertussis, Pediatria **29**: 337 (April 15) 1921.

nine cases tested with staphylococcus vaccine gave thirty-five positive and four negative reactions.

Of the twenty-six cases of active pertussis tested with pertussis vaccine (Table 6), fourteen reacted positively in three hours, nineteen in twenty-four and seven in forty-eight hours. Twenty-four cases of active pertussis tested with staphylococcus vaccine (Table 7) gave thirteen positive reactions in three hours, twenty in twenty-four hours, and fifteen in forty-eight hours. No reaction was considered positive unless at least 5 mm. in diameter.

CONCLUSIONS

No specific reactions were obtained by the use of various preparations of Bordet-Gengou bacilli injected intracutaneously to prove the presence of the disease, or a natural or an acquired immunity. Positive and negative results alike were obtained in children having the disease, in children with an immunity, and in children developing the disease after the injection.

152 West Eighty-Eighth Street.

ANAPHYLACTIC KERATITIS

REPORT OF A CASE

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The injection of a foreign protein into an animal produces severe, perhaps fatal, intoxication in many instances. With some proteins this natural toxicity is very marked: fresh bovine and human serum are quite toxic to guinea-pigs. It has been asserted that by injecting a pig with the dissolved lens of one eye, it will become sensitized, so that it will react to a subsequent injection of the lens from the other eye.[1] The symptomatology of the intoxication which follows injection of the protein into an animal sensitized with the same protein is such as to indicate that a poison is responsible, although as yet it has not been isolated. The syndrome is practically the same, no matter what sort of protein is being used; hence it would seem that the poison must always be the same or similar, no matter how varied the nature of the protein capable of inciting anaphylactic intoxication. Presumably this reaction is merely an exaggeration of the normal process of the defense of the body against foreign proteins. The anaphylactic state appears to influence virtually every part of the body.

Experimental work on ocular anaphylaxis is not frequently found in the literature, yet Kodama[2] has done some work along this line with the reaction of guinea-pigs to horse serum, with more or less definite conclusions. In a search through the literature for the last five years, I have been unable to find the report of a case of anaphylactic keratitis; in fact, one would surmise that ocular anaphylaxis is rare. It is undoubtedly true that nearly all, if not all, persons are sensitized at one time or another of his or her life, and under the present trend of medicine, when vaccines, serums and protein injections are daily made use of, it is surprising that more cases of anaphylactic intoxication do not develop. The case here reported may show to some degree in what the promiscuous injection of foreign protein may develop.

1. Wells, H. G.: Chemical Pathology, Philadelphia, W. B. Saunders Company.
2. Kodama, R.: J. Infect. Dis. **28**: 48 (Jan.) 1921.

REPORT OF CASE

J. N., a man, aged 23, complained of severe pain and loss of vision in the right eye, which had been present for twenty-four hours. He stated that two days before he had gone to the Blood Cell Serum Laboratory in response to an advertisement, in order that he might have his blood made thinner. Without further questioning a small quantity of blood had been withdrawn from his arm, and eighteen hours later, the serum having been prepared, he was given an intravenous injection.

Twenty minutes later he suffered a typical anaphylactic reaction: chills, fever and collapse, followed by prostration. Two days later the right eye became sore. The patient was a well nourished American with negative history except for the diseases of childhood. The physical findings were negative; the leukocyte count was 8,200; there was no anemia; the Wassermann reaction was negative. The nose, throat and teeth were in good condition.

The vision of the left eye was 20/20; the eyeball was normal. The vision of the right eye was 10/200. There was a subacute staphylococcic conjunctivitis with a slight amount of discharge. The cornea presented an acute deep keratitis with a secondary iritis. This keratitis was diffuse, involving nearly the whole cornea, so that only a faint red reflex was obtainable. In conjunction with the ocular condition, there was a localized eczematous patch on the upper lip. Under hot fomenations, atropin, ethylmorphin hydrochlorid (dionin) and catharsis, the eyeball gradually cleared, until on the twentieth day the acute process had subsided, leaving a punctate leukoma, and the vision rising to 20/50 minus 2. At the same time the patch on the upper lip disappeared.

COMMENT

The onset, symptoms and clinical course stamp the case as one of anaphylactic manifestation. It is true that we do not know what liquid was injected; but, assuming that it was serum drawn from the patient, the statement of Wells[3] that even the clotting of blood or plasma may produce changes that render it highly toxic for the animal from which it came, with the same anaphylaxis-like manifestations that are produced by the toxic serums in the typical anaphylatoxin experiment, the patient's own serum could have caused this reaction. Wolff-Eisner has advanced the hypothesis that drug reactions may be produced by the blood or tissue proteins altered by the chemical, so that they are as foreign protein to the injected animal; this would substantiate the assumption further.

Böttner[4] says that, on the whole, however, man does not seem to be highly susceptible to anaphylaxis, at least as compared with the guinea-pig, especially in view of the fact that collargol, containing 25 per cent. protein, has had widespread use in intravenous injections at intervals suitable to produce sensitization and shock, without recorded serious results. This statement would explain the few cases from sources such as mine.

Conceivably sensitized persons at times have free antigen in their blood, especially in a case of food sensitization, and if this is so, injury to any tissue or organ might possibly determine local anaphylactic reaction in these places. It is entirely possible, then, that the manifestation on the upper lip of this patient might have been of this nature.

The intravenous injection of foreign serums or proteins in the human being is not unfraught with elements of danger, and happily, though its promiscuous use is not widespread. It is entirely possible, however, that the intravenous injection of protein or chemical substance even in the hands of the skilled practitioner, may result in some unlooked for complication, especially in view of the fact that once protein is in the blood stream,

3. Wells, H. G.: Physiol. Rev. **1**: 44 (Jan.) 1921.
4. Böttner, A.: Deutsch. Arch. f. klin. Med. **125**: 1, 1918.

we lose all control over it, as apparently there is no means at present of knowing whether or not the patient is sensitized. The condition of antianaphylaxis, i. e., the presence of free antibodies in the circulating blood, preventing the antigen from coming in contact with the intracellular antibodies, may be a partial explanation of the lack of reaction in many cases.

CONCLUSIONS

1. Anaphylactic keratitis is a rare manifestation.
2. Intravenous injections of proteins or chemicals may possibly be followed by anaphylactic complications even in the hands of skilled clinicians.

25 East Washington Street.

PROBLEMS CONCERNING INFECTIONS OF CERVIX, BODY OF UTERUS, AND FALLOPIAN TUBES *

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A dozen years ago, dilation and curettage was probably the most frequently performed gynecologic operation. This held true for the most prominent clinics as well as for less well known operating rooms. Not only was this a usual operation, but the reason assigned for scraping the uterus was most often a chronic infection, variously designated as chronic metritis, endometritis or leukorrhea.

Observance of the futility of this procedure, particularly its limited value in attempts to relieve discharges, stimulated in me a desire to learn something about chronic leukorrhea and chronic infections of the uterus. These efforts, in turn, eventually led to a study of diseased fallopian tubes.

THE PROBLEM OF CHRONIC ENDOMETRITIS

Four years ago a combined bacteriologic and histologic study was completed of 118 uteri removed to remedy various pathologic conditions.[1] The greater part of the endometrium of these uteri was excised in its entire thickness down to the muscle layer, placed in sterile containers, and thoroughly ground and cultured; the remainder was used for microscopic examination.

This bacteriologic and histologic study revealed that the body of the uterus, above the level of the internal os, rarely yields evidence of chronic infection. It appeared that infection of the uterus commonly called "chronic endometritis" is practically to be ruled out as an independent clinical entity.

Since that work was reported, there has been gradual acceptance of the view that chronic infection of the body of the uterus is unusual; and with the growth of that belief, we have developed greater conservatism in the use of the curet in attempts to relieve chronic endometrial infection.

THE SOURCES AND TREATMENT OF CHRONIC LEUKORRHEA

A subject that has absorbed much of my time and attention is the problem of leukorrheal discharges;[2] the sources from which they arise, the nature and virulence of the bacteria present, and adequate measures for promotion of recovery have all been greatly in need of study.

Examination of discharges from large numbers of patients reveals that the normal vaginal secretion contains few bacteria aside from so-called "Döderlein" bacilli, which are innocent, large, gram-positive organisms closely related to lactic acid bacilli. Profuse, purulent leukorrheal discharges, on the contrary, contain a greatly varied flora, chiefly gram-negative anaerobic bacilli, most of which are mildly pathogenic for experimental animals. The most important leukorrheal organisms, from the standpoint of stubbornness of infection, as well as danger of serious pathologic processes, are gram-positive diplococci which grow into chains in cultures. These streptococci may be either aerobic or anaerobic, but the latter appear to be more virulent; they are the most frequent organisms present in puerperal infections with thrombophlebitis.

It has been possible to find two chief sources from which chronic discharges arise: (1) small glands about the meatus of the urethra, chiefly Skene's ducts and the urethral glands, and (2) the cervix of the uterus.

The cervix, as we all know, is lined with mucus-secreting glands, whereas there is practically no secretion from the body of the uterus. In patients with leukorrhea of cervical origin there is an overgrowth of infected hypersecreting mucus glands. Discharges persist not only because of the presence of these glands but also because there are associated granulations and varying degrees of obstruction of the cervical canal.

A small percentage of chronic leukorrhea cases are due to diffuse pelvic infection, to congested displaced organs and to other kindred lesions, but the overwhelming majority belong to the infected cervix-Skene's duct group.

During the last four years we have treated the most severe and persistent cases of chronic leukorrhea as follows: The vicinity of the urethra is searched for infected Skene's ducts and urethral glands. Diseased foci are threaded on the blunt end of a needle, the tract is laid open with a knife, and the lining is fulgurated or otherwise cauterized. The cervix is thoroughly dilated, and radium is introduced into the cervical canal for the purpose of producing atrophy of the infected hyperplastic glands. Recovery has resulted in ninety out of 104 patients treated according to this plan.

Whether the endocervix is treated with radium or thoroughly excised according to the method of Sturmdorf is perhaps immaterial. We must remember, however, that the glands in the region of the urethra also demand examination and appropriate attention.

INFECTIONS OF THE FALLOPIAN TUBES

An investigation of diseased fallopian tubes[3] was made in a series of 300 cases. Bacteriologic study was accomplished by thoroughly grinding and cultivating the entire diseased tube, with the exception of certain portions reserved for histologic examination.

From the clinical history, examination of the external genitalia, and evidence obtained at operation, together with laboratory study of the tubes, it was possible to determine that gonococcal infection was responsible for the pathologic changes in more than 70 per cent. Approximately 10 per cent. more were thought to have

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* Read before the Toledo, Ohio, Academy of Medicine, Nov. 17, 1922.
* From the Pathologic Laboratory and Gynecologic Service, St. Luke's Hospital.

1. Curtis, A. H.: A Combined Bacteriological and Histological Study of the Endometrium in Health and in Disease, Surg., Gynec. & Obst. **26**: 178 (Feb.) 1918.

2. Curtis, A. H.: Surg., Gynec. & Obst., March, 1914, p. 299; Chronic Leukorrhea: Its Pathology and Treatment, J. A. M. A. **74**: 1706 (June 19) 1920.

3. Curtis, A. H.: Bacteriology and Pathology of Fallopian Tubes Removed at Operation, Surg., Gynec. & Obst. **33**: 621 (Dec.) 1921.

been primarily infected with the gonococcus; but this could not be determined with certainty.

It has long been known that gonococci soon disappear from the tubal mucosa, but proof that infection does not persist in the deeper tubal structures has been wanting. It is therefore of interest to note that it has not been possible for us to obtain gonococci in cultures from the entire thoroughly ground tube if the patient has been free from fever and leukocytosis for a period of more than two weeks. Not only does the infection soon die out, but a single attack usually causes only moderate pathologic changes and symptoms of correspondingly mild degree. Badly diseased tubes are most often the result of frequently repeated infection from the lower genital tract or from an outside source.

Although the process of gonorrheal infection usually involves the entire thickness of the tube, the mucous membrane is most markedly affected. When healed, the mucosa in typical cases is crippled by adhesions between its folds or "villi." In addition to these adhesions we also find glandlike nests of mucosa buried in the tube wall as a result of the inflammatory process. Longitudinal and serial sections reveal that these nests remain connected with the tube lumen and form pockets which predispose to lodgment of the ovum and development of tubal gestation.

A final point in the differentiation of gonorrheal salpingitis requires emphasis. Adhesions to the surrounding viscera, even though old and numerous, can be separated by blunt dissection. This appears always to hold true, even though the process has been one of the greatest severity.

Streptococcus infection accounts for more than 10 per cent. of pathologic changes in the tubes. Nearly all of these infections are traceable to abortion or intrauterine instrumentation. The infections are often widespread in the cellular tissues, and tubal involvement is usually only a part of the picture. Although hydrosalpinx or other gross lesions may occur, the typical pathologic condition is perisalpingitis without notable change in the lumen or deeper portions of the wall of the tube. Adhesions vary in number and firmness; virulent streptococci tend to leave densely adherent surfaces without available lines of cleavage. Streptococci, in contrast with gonococci, may remain buried and viable in the tissues for many years after the original infection.

Tuberculosis has been present in 5 per cent. of diseased tubes removed by us. Tuberculosis of the female genitalia,[4] exclusive of generalized tuberculous peritonitis, is chiefly a tubal infection, and involves particularly the mucous membrane of the tube. The tubes are usually much enlarged and much indurated. When opened, it is found that thickening of the wall is due to hyperplasia of the mucosa, without much change in the muscle layer and peritoneal covering. The gross picture is similar to that of severe recurrent gonorrheal salpingitis. Some points that aid in the differentiation from gonorrheal tubes are these: There is greater tendency to pallor of the tissues. Tubercles are not often recognized until subsequent microscopic examination. Calcified areas may be palpated. Occlusion of the fimbriated ends occurs much less often than in gonococcus infections of equal severity; when the fimbriae are free, caseous material may sometimes be expressed from the open end of the tube. Adhesions are firm, and must often be cut or torn when separated.

Tuberculous and streptococcus infections of the tubes have in common certain features of surgical interest. Exceedingly firm adhesions, not amenable to blunt dissection, are characteristic of both. This is in contrast with gonococcal infection, as is also the tendency to persistence of viable bacteria in the tissues for very long periods of time. Extension of infection to the ovary is frequent in tuberculosis, and is one of the most distressing complications of streptococcus salpingitis. In the presence of a diseased ovary, with the indications for removal somewhat uncertain, more radical surgery appears indicated in streptococcus and tuberculous infections that in gonorrheal disease of equal severity, because persistently viable bacteria predispose to postoperative ovarian infection.

4. Williams, J. W.: Tuberculosis of the Female Generative Organs, Johns Hopkins Hosp. Reports **3**:85, 1893. Peterson, Reuben: Review of One Hundred Cases of Women with Pelvic Tuberculosis with Special Reference to the End-Results of Operative Treatment, Tr. Am. Gynec. Soc., to be published.

CONCLUSIONS

1. The body of the uterus seldom harbors bacteria for a long period of time. Discontinuance of uterine curettage in attempts to relieve chronic infection marks a decided advance in our methods.

2. In most instances, leukorrhea arises from the cervix and from glandular tissues in the vicinity of the urethra. Treatment directed to eradication of these diseased areas yields very satisfactory results.

3. Gonorrheal infection of the fallopian tubes is naturally a quickly self-limited disease. So-called chronic gonorrheal salpingitis is usually a recurrence from an external source or repeated invasion from the chronically infected lower genital tract.

4. Streptococcus infection of the tubes occurs usually as a complication of abortion or intra-uterine manipulation, and is commonly only a part of more widespread pelvic infection. Streptococci, in contrast with gonococci, may remain viable in the tubes for many months or even for years.

5. Even the most prolonged and most severe gonorrheal disease of the tubes is characterized by adhesions amenable to blunt dissection. Adhesions which require cutting or tearing speak for streptococcus or tuberculous infection.

6. In any given case, if there is question whether it is advisable to remove the ovaries at the time of operation, more radical measures are indicated in streptococcus or tuberculous infection than in gonococcal disease of equal severity, because viable bacteria probably remain buried in the tissues, and there is likelihood of postoperative chronic ovarian infection.

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Medical Impressions of Latin America.—Several physicians formed part of the official delegation sent by France to take part in the centennial celebrations in Brazil this fall. Dr. J. L. Faure, an official delegate from several scientific associations, has been publishing in the *Presse médicale* his impressions of the trip. It is a bright and breezy account of his journey to the "end of the world," as the Chileans call their country, Chile not being on the road to anywhere unless possibly in circumnavigating the globe. He traveled by land from Rio to Montevideo, Buenos Aires and Santiago, and was particularly impressed by the emergency service in these cities. At Santiago, there are three emergency stations, and when the ambulance arrives with the injured everything is ready even for the gravest interventions. One young surgeon there had already operated in four cases of stab wounds of the heart. There are arrangements for keeping the patients for a few days, after which they are transferred to a hospital or sent home. He says that the French might do well to take this emergency service as a model. The faculty of medicine at Santiago conferred an honorary degree on him.

DETERMINATION AND INTERPRETATION OF CHANGES IN LUNG VOLUMES IN CERTAIN HEART LESIONS*

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The development of the pathology of the circulation is one of the most interesting chapters in the history of medical science, first, because the diseases of the heart always have attracted the attention of many of the foremost clinicians; secondly, because the relation between

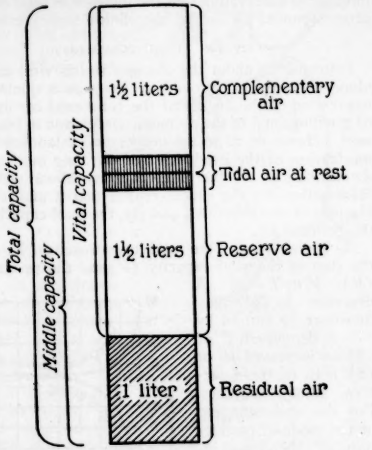

Fig. 1.—Lung volumes in "average normal" adult at rest.

the clinical studies of these diseases and the more fundamental medical sciences early became very intimate, and, thirdly because disturbances in the circulation usually do not remain confined to the circulatory organs. When disturbance in the function of the heart or, as we now know, in the function also of the capillaries reaches a certain intensity, changes in other organs (such as the lungs, liver, spleen, kidneys and subcutaneous tissue) occur. Such remote disturbances may be brought about in different ways, and may assume different characteristic features. They may in their very beginning remain confined to the vascular part of the organs. However, if the stasis lasts long enough, changes take place in the parenchymatous or interstitial parts of the organs. These changes may become permanent and irreversible, and may act almost as new and independent diseases (cirrhosis of the liver and kidneys; induration of the lungs). In some instances these secondary changes increase the extra burden already put on the heart through the primary lesion, and thus a vicious circle is established.

The study of the morphologic changes secondary to circulatory involvement began more than half a century ago, and our knowledge is in these respects rather complete. The physiologic or functional side of these questions has first more recently been subjected to investigations. Even the problems we face are not yet clearly defined. It is therefore natural that our interpretation of symptoms observed at the bedside is mainly or, in many instances, exclusively based on our anatomic knowledge.

Among the organs secondarily involved in circulatory failure, the lungs rank high in importance on account of the intimate anatomic and physiologic connections between the lungs and the heart. If, in a patient with heart disease, the lungs are secondarily involved, not only may the gaseous interchange between air and blood be interfered with, but also a mechanical hindrance to the blood flow itself may ensue. As to the last point not much information is at hand, and certainly very little is quantitatively known. From the accentuation of the second pulmonic sound, we conclude that an increased blood pressure is present in the pulmonary circulation, a condition that throws more work on the right ventricle and causes hypertrophy of its walls. Furthermore, it is usually assumed that a decreased range of excursion of the chest impedes the inflow of the venous blood to the right auricle. As to the first point, the exchange of the gases between the blood and the air, also very little is known. A disturbance of gaseous exchange may be caused in two ways: first, by an abnormal condition of the membranes separating the blood from the alveolar air, causing a slower diffusion of gases; second, by changes in the lung volumes, so that the tension of the gases in the alveoli is unfavorably affected. I shall in this confine myself to a discussion of one phase of the last mentioned problem; namely, the question of the changes in the lung volumes in patients with heart disease.

USUAL TERMINOLOGY APPLIED TO LUNG VOLUMES

Figure 1 represents the conditions in what we might term an average normal person at rest. The whole column indicates the total lung volume, that is, the maximum amount of air which the lungs hold after a maximum inspiration. A certain part of this can be expired at maximal effort; this is termed the vital capacity. A smaller part of the total capacity cannot by any means be brought out of the lungs. This is called the residual air. During rest, the normal subject does not use the whole range of his vital capacity: he breathes with the lungs a little more than half filled. This amount is called the middle capacity. After inspiration he has a little more, after expiration a little less air in the lungs. The difference between the expiratory and the inspiratory position is called the tidal air. The tidal air, in normal persons at rest, is about 500 c.c. (Table 1). In a series of studies on different problems connected with the pathology of respiration and circulation, carried on during the last few years in Professor Faber's

TABLE 1.—NORMAL RELATIVE VALUES FOR THE DIFFERENT LUNG VOLUMES BASED ON TWENTY-SEVEN OBSERVATIONS

Total capacity	100	T
Middle capacity	62	$T \times \frac{62}{100}$
Residual air	24.7	$T \times \frac{24.7}{100}$
Vital capacity	75.3	$T \times \frac{75.3}{100}$
Reserve air	37.3	$T \times \frac{37.3}{100}$
Complementary air	38.01	$T \times \frac{38.0}{100}$

* Read before the Harvard Medical Society, Boston, Dec. 5, 1922.
* From the Medical Clinic of the University of Copenhagen and the Hospital of the Rockefeller Institute for Medical Research.

Clinic in Copenhagen, the range of variation of the relative values of the lung volumes in normal resting adults was established. It was found that, in comparison with what is often seen in disease, the normal figures are fairly constant. The average normal values are given in Table 1. We can say that the vital capacity is three fourths and the residual air one fourth of the total capacity. The ratio of vital capacity to residual

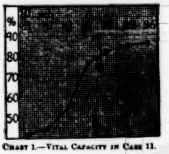

CHART 1.—VITAL CAPACITY IN CASE 11.

Case	Date	Vital Capacity		Condition	Remarks
		cc.	%		
11	2/8	1,400	42		Hydrothorax: nitrogen, edema of legs
(Chart 1).	2/10	1,475	45	Improved	Less dyspnea but still orthopnea
Med. No. 6261	2/12	1,800	55	Improved	Less edema; less dyspnea; less hydrothorax
Chronic	2/15	2,200	70	Improved	Lungs clear; less dyspnea; hydrothorax gone
myocarditis	2/19	2,750	83	Stationary	Left hospital in good condition
Auricular	2/22	2,775	83	Stationary	
fibrillation	2/29	2,900	88	Stationary	

Fig. 2.—Increase in the vital capacity of a patient with heart disease during treatment; the value does not reach the normal figure. (After F. W. Peabody.)

air is, of course, 3:1. If, therefore, the normal value of one of the lung volumes is known, one can with a certain degree of accuracy calculate the other volumes.

VITAL CAPACITY

These different lung volumes, fairly constant in normal resting persons, may undergo smaller or larger changes in patients with heart disease. Let us first consider the vital capacity. The exactness and easiness with which the vital capacity is determined since Hutchinson, in 1846, introduced the spirometer, has resulted in a large number of investigations. We know that the vital capacity is often diminished to a very considerable extent in patients with heart disease, especially in patients with mitral lesions, because the lung stasis is most pronounced in these cases. By dividing

TABLE 2.—RELATION BETWEEN DEPTH OF RESPIRATIONS, NUMBER OF RESPIRATIONS, AND AIR IN LUNGS, SECURING COMPLETE MIXTURE OF LUNG AIR AND BAG AIR IN DILUTING METHOD

Liters of Air Left Unexpired in Lungs During Mixing	Depth of Respiration in Liters							
	1	1.5	2	2.5	3	4	5	
6.3	..	14	..	..	..	..	..	Number of rebreathings necessary to secure full mixture*
5.8	..	13	7	..	..	..	..	
4.8	..	10	7	..	6	..	..	
3.8	..	6	6	..	5	4	..	
2.8	..	6	5	..	5	3	3	
2.0	9 (6)	6 (5)	4 (3)	(3)	3	3	3	
1.3	(7)	(5)	(3)	(3)	(3)	..	..	

* Figures in parentheses apply to bag, the others to a Krogh spirometer. The connecting tube between spirometer (bag) and mouth must be not more than 30 cm. long and not less than 1.5 cm. wide. Respiration rate from 8 to 20 a second. Not more than from 1 to 2 liters of air must be left in spirometer after inspiration.

patients into groups according to their height, Peabody and his associates at the Harvard Medical Clinic [1] have shown that a decrease in the vital capacity is a conspicuous symptom in many patients with heart lesions. If the patients were segregated according to the severity of the clinical symptoms, it was found that a general parallelism existed between the decrease in the vital capacity and the severity of the condition. They furthermore have shown that definite changes in the vital capacity take place as the clinical conditions of the patients change. In Figure 2, which is taken from one of Peabody's publications, this is clearly seen. During the stay in the hospital the vital capacity has increased considerably without, however, reaching its normal value. The first four determinations were made during the decompensated, the last three during the compensated, stage. It is of interest that the vital capacity did not reach its normal value. Brittingham and White [2] made the interesting observation that the increase in vital capacity often seems to lag behind the clinical improvement.

OTHER LUNG VOLUMES

Information about the changes in the vital capacity alone certainly has proved of value as a quantitative expression of the degree of the functional involvement of the lungs and of the pulmonic circulation in heart disease. However, as to the deeper understanding of the mechanism of the production of the lung involvement, determinations of the vital capacity alone yield less information for the simple reason that it may express changes in two variables, namely, the total capacity and the residual air.

As is well known, the total lung capacity (T) equals the sum of the vital capacity (V) and the residual air (R). $V = T - R$. A decrease in V may therefore be caused by (1) a decreased T or (2) an increased R, or (3) both of these factors acting together. For the understanding of the mode of production of the lung involvement in heart disease, it is therefore of fundamental importance to study the changes in total capacity and residual air.

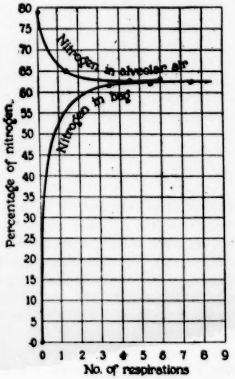

Fig. 3.—Mixing curves (oxygen method) obtained by taking repeated samples of air from bag (lower curve) and from alveoli (upper curve) without interrupting rebreathing. Mixture is present when alveolar curve bends upward (on account of decrease in total amount of air in bag + lungs). The value to be used for calculation is at the corresponding point of lower curve. (After different articles of Lundsgaard and Schierbeck, Proc. Soc. Exper. Biol. & Med. and Am. J. Physiol., to be published).

In determining these volumes we face two obstacles, which are not always easy to overcome. The first is a difficulty in the determination of these lung volumes; the second, a difficulty in the estimation of the results gained. As to the first question, the total capacity, the middle capacity and the residual air cannot be brought entirely out of the chest. They can therefore be determined only by applying one of the so-called dilution methods, which require a complete mixture between the air in the lungs and the outside air. In normal persons such a mixture can easily be obtained. In heart patients, however, it is often difficult to ascertain the presence of complete mix-

1. Peabody, F. W., and Sturgis, C. C.: Clinical Studies of Respiration: Effect of General Weakness and Fatigue on Vital Capacity of Lungs, Arch. Int. Med. **28**: 501 (Nov.) 1921. Peabody, F. W., and Wentworth, J. A.: Clinical Studies on Respiration, ibid. **20**: 443 (Sept.) 1917. McClure, C. W., and Peabody, F. W.: Relation of Vital Capacity of Lungs to Clinical Condition of Patients with Heart Disease, J. A. M. A. **69**: 1954 (Dec. 8) 1917.

2. Brittingham, H. H., and White, P. D.: Cardiac Functional Tests, J. A. M. A. **79**: 1901 (Dec. 2) 1922.

ture. In the Copenhagen Clinic we have studied the quantitative influence of variations in the three most important factors entering into the process of mixing lung air with other air when other minor factors are kept approximately constant. The three factors are the number of rebreathings, the depth of the rebreathings, and the amount of air left in the lungs after the expiratory phase of the rebreathings.

Based on our experimental results we have worked out a table from which we can select the magnitude for these three factors necessary to secure mixture in a given case (Table 2). If we want still further guarantee that mixture is present, we can construct what we might call a mixing curve, as shown in Figure 3. Such a curve can be obtained by having a patient rebreathe from a bag (Fig. 4). Without disturbing the experiment, small samples of air are drawn from the bag and from the alveoli into evacuated tubes. The percentage of nitrogen (if the oxygen method is used) can be plotted in curves, as shown in Figure 3. Mixture has taken place where the upper curve is at its lowest point. The nitrogen value to be used is the corresponding figure in the lower curve. In this way we have secured complete mixture in the determinations of the total lung capacity and the residual air of our heart patients. In patients with so small a vital capacity (below 1 liter) that the depth of the mixing respirations cannot become large enough to secure mixture within a reasonable time, the nitrogen-hydrogen method worked out in 1920 at the Rockefeller Hospital by Van Slyke and Binger [3] may be used.

Fig. 4.—Five liter rubber bag: lead tubes with capillary boring inserted at *C* and *B*; through these tubes, samples of air can be drawn into evacuated recipients without interrupting rebreathing; alveolar air drawn at *C*; bag air drawn at *B*. (After Lundsgaard and Schierbeck.)

Having obtained reliable figures for the different lung volumes actually present in such patients, we face the second obstacle, namely, the question how to find and express the deviation of these lung volumes from what would be the normal figures in such patients. Hutchinson realized that the directly observed figures did not yield any quantitative and hardly enough qualitative information. Rubow,[4] in his investigation on the lung volumes in patients with heart disease, calculated the relative size of the different lung volumes, using the total volume as the basic figure (Table 1). It is generally supposed that changes in the relative size of the lung volumes express important functional abnormalities, and other investigators have since the time of Bohr's and Rubow's publications used this way of presenting their observations.

In Table 3 the relative values of the different lung volumes in eleven heart patients are given. The value for the total capacity is 100, and the values for the middle capacity, the vital capacity and the residual air are consequently fractions of 100. In this way the middle capacity becomes either normal or slightly increased. Similar results were obtained by Rubow, who in this way saw a proof of Bohr's much discussed theory about functional adjustment of the middle capacity. Bohr thought that an increase in the middle capacity facilitated the blood flow through the lungs, and that it therefore was to be looked on as a functional adjustment secondary to a decreased power of the myocardium.

The relative values for the residual air show a considerable increase, and values for the vital capacity a marked decrease in all our cases. Expressed as relative values, our observations therefore simply confirm several previous determinations.

Quite a different picture of the conditions is obtained if the lung volumes are given, not relative to the observed total capacity but in percentage of the figures indicating the normal size of the lung volumes in each particular patient. These normal figures, of course, can be obtained only by calculation from some other body figure. Several empiric procedures have been proposed in the course of time, particularly for calculating the vital capacity. All, however, are open to discussion, and not more than an approximation can be claimed for any of them. We have applied the procedure devised by Van Slyke and myself [5] at the Rockefeller Hospital in 1918. We determined three dimensions of the chest in the different positions. The lung volumes were then determined in the corresponding positions. In a series of eighteen normal adults the ratio between the size of the chest (determined as the product of the three dimensions) and the lung volumes were found to be constant enough to be useful for a calculation in cases in which only the chest measurements could be obtained. In another series of determinations of the chest-lung volume ratio in twenty-seven normal adults in the Copenhagen Clinic, we arrived at practically the same average figures and the same constancy as found in the first eighteen subjects at the Rockefeller Hospital.

It is self evident that one cannot calculate the normal lung volumes from the chest dimensions if the form of the thorax deviates materially from the normal. It is also clear that one cannot *a priori* rely on its validity in patients in whom the excursions of the chest wall are abnormal, a condition which is common in heart patients, as expressed in Table 4.

However, by combining the ratio of chest dimensions and lung volume with the normal ratio between the different lung volumes, one can overcome this difficulty and obtain figures which can be shown at any rate to approximate the normal so much that it is justifiable

TABLE 3.—OBSERVED LUNG VOLUMES GIVEN IN PERCENTAGE OF NORMAL RELATIVE VALUES*

No. of Patients	Total Capacity	Middle Capacity	Residual Air	Vital Capacity	Comment
1	100	105	122	92	Patients with uncompensated heart failure
2	100	99	143	85	
3	100	90	118	94	
4	100	99.5	145	85	
5	100	87	146	84	
6	100	142	156	81	
7	100	...	215	62	Patients with compensated heart failure
8	100	103	170	77	
9	100	101	136	88	
10	100	96	135	88	
11	100	125	187	71	

* Compare Table 1.

3. Van Slyke, D. D., and Binger, C. A. L.: Proc. Soc. Exper. Biol. & Med. **18**: 141, 1921.
4. Rubow, V.: Deutsch. Arch. f. klin. Med. **132**: 255, 1908.
5. Lundsgaard, Christen, and Van Slyke, D. D.: J. Exper. Med. **27**: 65 (Jan.) 1918.

to consider them the normal figures.[6] We have in this way determined quantitatively the deviation of the lung volumes from the normal in eleven patients with heart disease. We found (Table 4) that in most cases a decrease in the total capacity takes place, a decrease which as a whole is most pronounced in the clinically most severe cases. The figures range from 107 to 52 per cent. of the value calculated as normal. The middle capacity is either diminished or normal. The residual air is decreased in three cases and increased in eight. The vital capacity is decreased in all cases, and often to a very considerable extent. The reason for the discrepancy between the values in Table 3 and in Table 4 is, of course, the fact that the figures in Table 3 were based on the observed total volumes, which in itself deviates considerably from the normal values.

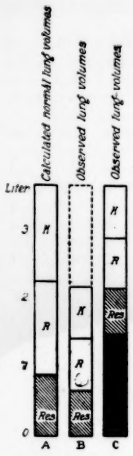

Fig. 5.—Mode of production of changes in total lung volumes in heart patients: *A*, calculated normal figures in Patient 1; *B*, condition if decrease is due to diminished expansion of chest; a certain amount of air remains outside the chest (area inside dotted lines); *C*, mechanism if diminished air content of lungs is due to an increase in the nonaerial space (black area) in the normally expanded thorax: *V K + R*, vital capacity; *Res.*, residual air. (After Lundsgaard and Schierbeck.)

The figures in Table 4 bring out two important facts that were distorted or even veiled in Table 3. One concerns the middle capacity, in which no increase is present. The other is that the residual air may be increased in some and decreased in other cases of heart failure. In short, in heart patients we have found that the total lung volume and middle capacity are in most cases diminished; in others, normal. The vital capacity is more or less decreased; the residual air is in some cases decreased, in others, increased.

Peters and Barr,[7] in 1920, used this procedure in calculating the normal lung volumes in six patients with heart diseases. They did not find any increase in the residual air in any of their patients. In calculating the normal lung volumes, they proceeded in the same way as Garvin, Lundsgaard and Van Slyke in tuberculous cases in 1918, using the actual chest measurements without correction. However, if this is done, a considerable error may result, usually so that the calculated residual air is too large. If Peters and Barr's results are corrected for impaired chest movement, their figures change considerably, and the first four cases show increased residual air. In the last two heavily decompensated cases the residual air is diminished, even compared with the corrected figures. The correction, as in our own figures, is made by assuming the position of the chest to be normal in maximum inspiratory position. Vital capacity and residual air are then found by multiplying the (calculated) total volume by 0.75 and 0.24, respectively (Table 1).

MECHANISM OF PRODUCTION OF CHANGES IN TOTAL LUNG VOLUME

The decrease in the total lung capacity can theoretically be brought about in two different ways, as shown in the diagram in Figure 5. The total maximum air space may be diminished because the chest wall does not expand as much as usual. Consequently, a certain part of the complementary air or even a part of the reserve air remains outside the lungs (Column B). The other mode of production is shown in Column C. The chest wall can expand to its normal limit. However, a larger part of the chest space than usual is occupied by fluid or solid matter, leaving less space for air. This explanation was already suggested by Traube. Later it was taken up by Siebeck.[8] If the decrease in the total lung capacity was produced as shown in Column B by a less extensive expansion of the chest than usual, one would have to assume an effect either of weakness of the inspiratory muscles, or of stiffness of the lungs (von Basch's[9] *Lungenstarre*). However, Peabody and Sturgis showed in 1921 that weakness cannot have any important effect. As to the stiffness, one must assume that if it is present it exerts its influence on the expiratory rather than on the inspiratory movement. It therefore seems not very likely that Column B represents the condition. On the other hand, can the decrease in the total air space of the lungs be attributed solely to an increase in the nonaerial contents of the chest? We have a series of factors which act together in diminishing the air space of the thorax, namely: (1) an increased blood content of the lung capillaries; (2) an increased thickness of the interstitial tissues; (3) eventually some intra-alveolar and intrapleural fluid, and (4) increased size of the heart. To these four factors may be added (5) increased size of the abdominal organs (liver, etc.), forcing the diaphragm upward, although the mechanism is some-

TABLE 4.—OBSERVED VALUES OF DIFFERENT LUNG VOLUMES IN PERCENTAGE OF NORMAL VALUE, CALCULATED FROM THE SIZE OF THE CHEST WALL, AFTER CORRECTION FOR DIMINISHED EXCURSION OF CHEST HAS BEEN MADE

No. of Patients	Total Capacity, per Cent.	Middle Capacity, per Cent.	Residual Air, per Cent.	Vital Capacity, per Cent.	Excursion of Thorax, $\frac{Cr}{Ct}$*	Comment
1	60	63	73	56	86.4	Patients with uncompensated heart failure
2	52	51	73	45	84.7	
3	54	49	64	52	82.5	
4	78	78	112	67	83.0	Patients with compensated heart failure
5	100	87	145	86	79.2	
6	71	100	108	58	80.3	
7	81	....	172	50.5	82.0	
8	85	87	142.5	65	81.5	
9	102	103	132	94	80.9	
10	107	102	142	96	84.3	
11	89	112	164	61	85.3	

* Normal ratio, 74.7. $\frac{Cr}{Ct}$ = "chest volume" at maximum expiration divided by "chest volume" at maximum inspiration.

TABLE 5.—CHANGES IN LUNG VOLUMES IN ELEVEN PATIENTS WITH MITRAL DISEASES AT DIFFERENT CLINICAL STAGES

Clinical Conditions	Lung Volumes: Total Capacity	Vital Capacity	Residual Air
Compensated stage: Incipient cases	Normal	Decreased	Increased
Compensated stage: More advanced cases	Decreased	Further decreased	Increased
Decompensated stage	Further decreased	Further decreased	Decreased

6. The rather elaborate calculations are not given here. Readers are referred to a series of articles to appear in 1923. Preliminary reports were given at the December, 1922, meeting of the Society for Experimental Biology and Medicine.

7. Peters, J. P., and Barr, D. P.: **Am. J. Physiol. 54:** 335 (Dec.) 1920.

8. Siebeck, R.: Deutsch. Arch. f. klin. Med. **100:** 204, 1910; **107:** 252, 1912.

9. Von Basch: Klinische und experimentelle Studien aus dem Laboratorium von Prof. von Basch, Berlin **1:** 171, 1891.

what different. Indeed, one might be inclined to ascribe to the last factor the mode of action expressed in Column B. The maximum difference between the total lung volume calculated as the normal figure and the observed lung volume is in our eleven cases 1.75 liters (No. 5). Although no quantitative information is at hand as to the effect of these different factors, we believe that we are justified in ascribing the diminished total lung volumes in heart diseases to a pathologic increase in the solid and fluid matter normally present in the chest cavity (including the upward displacement of the abdominal organs).

MECHANISM OF PRODUCTION OF CHANGES IN RESIDUAL AIR

We found, as mentioned, in eight patients a considerable increase, whereas a decrease was present in three patients. By comparing these figures with the clinical pictures, a highly important fact is revealed. The eight patients showing increased residual air were all in the so-called compensated stage, whereas the three patients showing a decrease were markedly decompensated. How is it brought about that the residual air is increased in the compensated stage but decreased when compensation is broken? The explanation of this is, I believe, to be found in von Basch's theory about the so-called *Lungenschwellung* and *Lungenstarre*. I think it might be of interest to see how von Basch arrived at his theory. He wound a rubber tube containing water on a spiral on the outside of a soft bag. The bag was supposed to represent the air space in an alveolus and bronchus, and the tube the blood vessels around the alveolus. By increasing the pressure in the tube, he could produce a distention of the bag (Fig. 6). He boldly transferred this by analogy to the conditions in the human lungs in patients in whom the pressure in the pulmonary circulation was increased. His theory has never been actually confirmed in patients. On the contrary, most investigators have rejected it. I believe that our findings may be explained by von Basch's theory better than in any other way, so far as the mild cases are concerned. The increased residual air in these cases, according to this theory, is caused by a stiffness of the lung capillaries on account of the increased pressure in the capillaries. It is interesting and of importance that we have found this increase in the residual air to be present before the total capacity is affected. Similarly, the sign of increased pulmonic blood pressure, the accentuation of the second pulmonic sound, is the earliest sign of valvular mitral disease. In the advanced cases, von Basch's theory does not hold true. This is undoubtedly due to the same factors that diminished the total air space, namely, increase in the solid and fluid content of the chest and probably particularly to fluid in the alveoli.

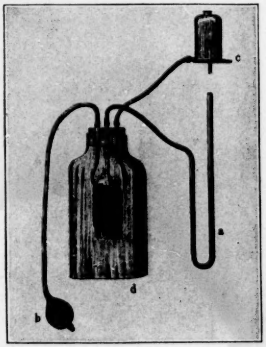

Fig. 6.—Von Basch's apparatus for demonstrating the effect of increased pressure in a rubber tube wound up in a coil around a rubber bag; *a*, manometer connected with the bag.

MECHANISM OF PRODUCTION OF CHANGES IN VITAL CAPACITY

The vital capacity was found to be diminished in both the compensated and the decompensated stage. In the first stage, this decrease is mainly or even entirely due to the increased residual air, that is, to stiffness of the lungs. In the second stage, the decrease in the vital capacity is caused exclusively by the diminished total volume, that is, to the diminished air space in the lungs. A continued series of determinations of the lung volumes in heart patients during different functional stages of the disease, as taken up by Dr. Binger at the Rockefeller Hospital, will undoubtedly prove to be most valuable for correlating the clinical stages with the changes in lung volume. In the first place, one will be able to follow the excursions of the chest and the diaphragm from time to time, and in this way test the validity of our assumption. Furthermore, by determining the lung volumes from time to time, one obtains a sort of control on the calculated figures.

The ordinary sequence of events in heart patients with lung involvement, according to our findings and interpretations, is therefore the following:

In the very first stage of a (mitral) lesion in which the main clinical symptoms are the accentuated pulmonic second, the concentric hypertrophy of heart and the murmurs, the only abnormality found may be an increased residual air. In course of time when the stasis lasts long enough, the total volume begins to decrease, owing to the increasing influence of the previously mentioned factors. The residual air may, however, still be found increased. At last a period of broken compensation turns up, with further decrease in the total capacity. In this period, however, the residual air is diminished often to a considerable degree.

From this it appears natural that the vital capacity in heart patients cannot in the course of effective treatment increase to its normal value (Fig. 2). Even if the total capacity becomes normal, the residual air remains increased on account of the increased pressure in the pulmonic circulation necessary for the establishment of compensation. The vital capacity, therefore, must remain somewhat diminished.

I shall not in this place enter into a discussion of the effect of the changes in lung volumes on the mechanism of respiration and on the gaseous supply of the blood.

Parasites and Their Discoverers.—In 1879 the epoch-making discovery of the rôle of the mosquito in the development of filarial worms was made by Manson and the science of medical entomology was born. The transmission of trypanosome diseases by tsetse flies was discovered by Bruce in 1893, the relation of mosquitoes to yellow fever by the American Yellow Fever Commission in 1900, and to dengue by Graham in 1902; the relation of ticks to African relapsing fever by Dutton and Todd, and independently by Koch in 1905; the relation of ticks to spotted fever by Ricketts in 1906; the relation of lice to typhus by Nicolle and his fellow workers in Algeria in 1909, and independently by Ricketts and Wilder and by Anderson and Goldberger in Mexico in the same year (published in 1910); the life history of blood flukes by Leiper in 1914 and 1915, and the rôle of crabs as second intermediate hosts of lung flukes by Nakagawa in 1916.—Chandler, Animal Parasites and Human Disease.

THE CHOICE OF PYELOGRAPHIC MEDIUMS *

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AND
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In 1906, through the work of Voelcker and von Lichtenberg, the urinary tract was first rendered opaque to the roentgen ray. Since that time the technic of pyelography has steadily improved, and the procedure, now satisfactory and devoid of danger, plays a rôle of supreme importance in urologic diagnosis. The earliest efforts and their attendant difficulties are matters of common knowledge. The colloidal silver preparations of which so much was expected proved unsafe. Indeed, their untoward effects might well have been foretold had it been remembered how readily invasion of the renal and general circulations may follow abnormal pressure within the kidney pelvis. Instances of disaster following the use of silver are multiple, the damage resulting in most cases from silver embolism, and the kidney being usually the chief sufferer.

These more harmful substances, therefore, were supplanted by the thorium solution of Burns.[1] This was an excellent contribution. Its value from the standpoint of density in roentgen-ray plates is unquestioned. But thorium is expensive; the solution is not easy to prepare and it is kept sterile with some difficulty, as evidenced by the fact that it permits the growth of molds.

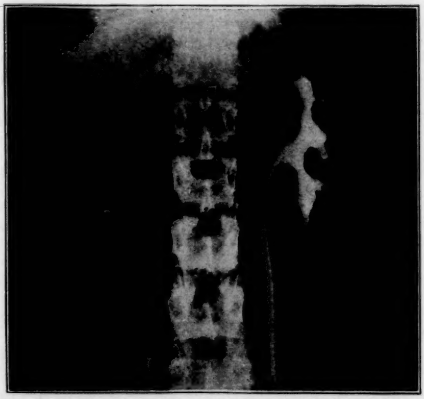

Fig. 1.—Normal renal pelvis filled with 12 per cent. sodium iodid solution.

During the last few years simpler substances, salts of the halogen group, have come into favor and have been generally accepted as more nearly ideal pyelographic mediums. Aqueous solutions of sodium bromid and sodium iodid have proved to be highly satisfactory. They are of sufficient molecular weight to cast good shadows. They are readily injected through small catheters and are withdrawn with equal ease. They are inexpensive, easily prepared, and kept sterile without difficulty. Furthermore, they are so entirely lacking in toxic effects that their entry in small amounts into the circulation, should it occur, need not be feared.

We have referred to the fact that thorium permits the growth of molds. No such contamination will be found in the bromid and iodid solutions; but whether or not they possess positive germicidal properties is an important question which seems not to have been answered. A study of the phenol (carbolic acid) coefficients of these two substances has therefore been undertaken. As a result of this investigation, it is possible to say that both solutions have a very slight inhibitory effect on bacteria. There is no significant difference, in this regard, between the sodium iodid and the sodium bromid. Neither is definitely bactericidal.

While sodium bromid and sodium iodid are both entirely satisfactory from the point of view of roentgen-ray density, sodium bromid has been more widely used. In this clinic for several years it has been employed as a routine in 25 per cent. solution. The same substance is in use in the Boston City and Massachusetts General hospitals. Sodium iodid has also had its champions, notable among them being Cameron,[2] who is responsible for a good deal of the experimental work that has been done to compare the efficiency of these two mediums. He first recommended a 25 per cent. iodid solution, but later suggested that its hypertonicity might prove undesirable. He finally selected a 13.5 per cent. solution, and on the basis of his very thorough work, he concluded that it was the best available pyelographic medium. From the standpoint of opacity, he found it just as satisfactory as 25 per cent. sodium bromid, and better than thorium. He called attention also to the important observation that iodin possesses a selective absorption, apart from its atomic weight, and that the relative density of its shadow increases with increasing penetration of the roentgen rays. Believing, further, that toxicity grows with hypertonicity, he felt that the markedly lower osmotic pressure of 13.5 per cent. sodium iodid solution gave it distinct advantage when compared with 25 per cent. sodium bromid.

We became interested in the problem of the choice of mediums as a result of an incidental observation made in the course of a long experimental study of the urinary tract. We were interested in the reaction of the bladder musculature to distention with various fluid substances. Anesthetized rabbits were used. A ventral midline incision and retraction of the intestines made it possible to observe the slowly filling bladder, together with one or both ureters. Provision was made for the recording of intravesical tension. Purely as a basis for more accurate interpretation of subsequent fluoroscopic studies, we were filling with body-warm 25 per cent. sodium bromid solution. We were greatly surprised at the close of the first of these experiments to find that striking changes in the bladder wall had

* From the Laboratory of Surgical Research of the Medical School of Harvard University and the Urological Clinic of the Peter Bent Brigham Hospital.

1. Burns, J. E.: Thorium—A New Agent for Pyelography, J. A. M. A. **64**: 2126-2127 (June 26) 1915; Further Observations on the Use of Thorium in Pyelography, Tr. Sect. Gen.-Urin. Dis. A. M. A., 1916, pp. 314-323.

2. Cameron, D. F.: Aqueous Solutions of Potassium and Sodium Iodids as Opaque Mediums in Roentgenography, J. A. M. A. **70**: 754-755 (March 16) 1918. Cameron, D. F., and Grandy, C. C.: Sodium and Potassium Iodids in Roentgenography, ibid. **70**: 1516 (May 25) 1918. Cameron, D. F.: The Use of Iodids in Pyelography, ibid. **72**: 1737 (June 14) 1919; A Comparative Study of Sodium Iodid as an Opaque Medium in Pyelography, Arch. Surg. **1**: 184-214 (July) 1920.

been produced. In numerous previous experiments we had filled with warm physiologic sodium chlorid solution to the point of moderate tension, and at the end of each of the experimental periods we had found the bladder able actively to empty itself. Furthermore, there were no gross changes in the vesical wall as a result of the filling. With 25 per cent. sodium bromid solution used under the same conditions, the results were invariably different. Very marked changes occurred, and the bladders were rendered incapable of normal contraction. Large quantities were not used to produce these effects (average 40.7 c.c.), and the pressures engendered (average 17.4 mm. of mercury) were low as compared with the levels frequently reached in our work with physiologic sodium chlorid solution.

The first response to bladder filling with 25 per cent. sodium bromid was an increased irritability of the vesical musculature marked by rhythmic undulatory contractions. This initial stimulation, however, was only transient, and gave way finally to distinct depression. As filling progressed, the posterior region of the bladder developed a pale, silvery sheen, the spread mesh of muscle bundles being blanched as though completely anemic. With greater distention, the most conspicuous and important change occurred in the form of extreme edema. This involved chiefly the posterior dependent portion of the bladder, but extended into all of the adjacent tissues. A striking jelly-like, edematous layer appeared between the lateral trunk blood vessels and the vesical wall. Bromin, forced through structures of altered permeability, could be recovered from the serous surface of the organ. Thrombosis of small vessels was sometimes seen. When emptying was permitted, the bladder was found to be completely crippled as a result of the single filling. The anterior wall, protected somewhat by the air bubble and away from the weight of the bromid solution, contracted normally. The posterior wall collapsed like a wet paper bag.

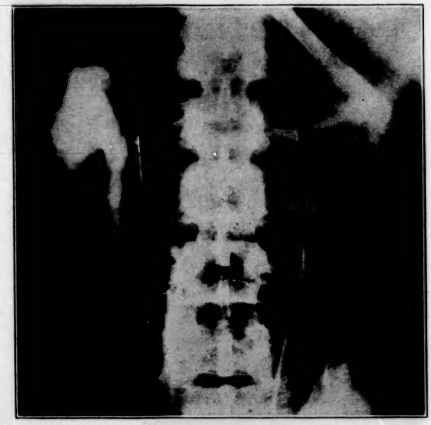

Fig. 2.—Hydronephrosis and hydro-ureter, with associated infection; pyelogram made with 12 per cent. sodium iodid solution.

The same experiment performed in a dog of 13 kg., 400 c.c. of fluid being used, raising a pressure of only 40 mm. of mercury, produced the same striking edema and the same characteristic bromid changes. Suspecting that these results were not the specific effect of sodium bromid itself, we performed similar experiments using isotonic 36.4 per cent. sodium iodid. Similar changes were produced. Twenty-five per cent. sodium chlorid solution also gave the same picture. Furthermore, "physiologic" bromid, isotonic with the blood, was found to be of no more effect than physiologic sodium chlorid solution.

Hypertonicity seemed, therefore, to be the responsible factor.

It was then of importance to determine how long the damage due to bromid persisted. With aseptic technic, rabbits were catheterized, and the bladders, emptied of urine, were gently filled with warm 25 per cent. sodium bromid solution. A brief, light anesthesia was obtained with morphin and ether. The fluid was introduced by means of a small syringe, care being used to avoid large quantities and high pressures. In six cases the amounts injected varied from 10 to 32 c.c. (average, 21 c.c.); and the pressures ranged from 10 to 22 mm. of mercury (average, 15 mm. of mercury). At the end of the filling and when the pressure had been maintained for a brief interval, the bladder in each case was allowed to empty and the catheter was withdrawn. The average time spent in this entire procedure was twenty minutes.

The animals were returned to the cage, and twenty-four hours later anesthesia was repeated. A ventral incision permitted direct inspection of the bladders. In one of the six cases there were present only patches of slight discoloration on the posterior wall. It is perhaps of some significance that in this instance less than fifteen minutes was spent in the filling, and the pressure developed was slightly lower (10 mm. of mercury) than in the other experiments of this series. In the remaining five cases, however, lesions of surprising extent were found. In all of them the urine was grossly bloody. The bladders were thin, flabby and edematous. They presented a grayish discoloration, most marked posteriorly, and there was extensive thrombosis of the blood vessels. The edema involved all of the adjacent structures, and fresh fibrinous adhesions between the bladder and the neighboring loops of the bowel gave a typical picture of a plastic pelvic peritonitis. Subserous petechial hemorrhages in the dependent coils of intestine were also frequently seen.

In the production of these lesions, irritants other than sodium bromid may be excluded as factors. Infection was certainly not concerned in the picture after so brief an interval. One of the animals gave signs of acute illness, and in this case a few cocci were seen in smears of the bladder urine. Smears from the extravesical exudate, however, contained no organisms. In another case with typical changes, cultures from the urine and from the fibrin on the outer bladder surface were negative. That an actual rupture of the organ at the time of filling was not responsible for the conditions found was evidenced by the fact that these damaged bladders could still be filled with considerable quantities of physiologic sodium chlorid solution and withstand high pressures.

Our next procedure was to perform a similar experiment and observe the bladder after forty-eight hours. With the aid of morphin, 20 c.c. of the bromid solution

was introduced very slowly; 12 mm. of mercury was the highest resulting pressure, save for a transient sharp rise to 40 mm. during a struggle of the animal. After a forty-eight-hour interval, the rabbit seemed entirely well; but the bladder presented the typical changes which have been described. These were less in extent, however, and showed signs of recovery. Thirty-five cubic centimeters of physiologic sodium chlorid solution was now introduced, raising a pressure of 23 mm. of mercury, and the organ remained entirely intact.

As we believed that we were dealing with the influence of hypertonicity, it now seemed important to learn how much it was necessary to reduce the concentration of the solution in order to escape its untoward effects. Testing solutions of lesser percentage, we found that 10 per cent. sodium bromid was practically innocuous. But this concentration was insufficient for satisfactory roentgen-ray density, as proved by a clinical trial. We selected, therefore, a 14.56 per cent. solution of sodium iodid, isotonic with 10 per cent. bromid. As might be expected from its isotonicity, it was equally lacking in harmful effects when subjected to our experimental test. Moreover, its much heavier molecular weight gave it a very satisfactory degree of opacity to the roentgen ray. The results of its clinical use were excellent. It was then interesting to find that for clinical purposes the margin of safety could be made still greater. Twelve per cent. sodium iodid is perfectly satisfactory for the making of pyelograms, and this solution is now in routine use in our clinic. It is isotonic with 8.2 per cent. sodium bromid. Compared with sodium bromid, therefore, its use involves a reduction in hypertonicity from that of a 25 per cent. to that of an 8 per cent. solution.

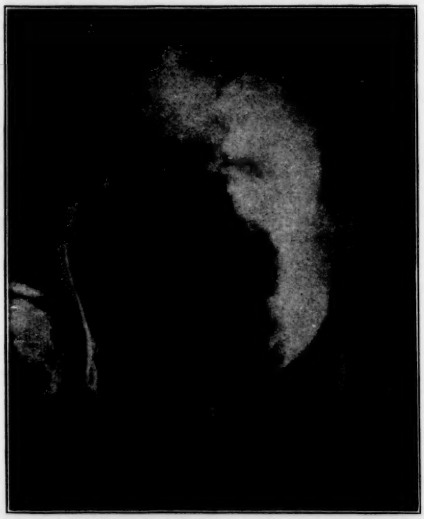

Fig. 3.—Adenocarcinoma of bladder, with small diverticulum; cystogram made with 12 per cent. sodium iodid solution.

We do not wish to infer that serious damage such as we have described follows the clinical use of 25 per cent. sodium bromid. We do submit, however, on the basis of our work, that it is potentially an irritant and that its use is unwise. We feel that its hypertonicity, especially in the presence of increased pressure, may cause sufficient edema of the renal pelvis to occlude its outlet and so produce the picture of colic, chills and fever which too often follows pyelography. This is especially true when the amount introduced is large and when the fluid is retained for any considerable time. Certainly, bilateral pyelograms with this solution are inadvisable, if, indeed, they are ever warranted.

The following clinical record is of interest. The observation was made by a member of the staff who at the time knew nothing of our work:

A man, aged 46, came into the hospital with symptoms of disease of the urinary tract. A diagnosis was made of renal calculus with associated infection, on the right side. In the course of the investigations, bilateral pyelograms were made with the 25 per cent. bromid then in use. Slight enlargement of the right kidney pelvis was shown, a stone being apparently within its collecting portion. Following the cystoscopy, the patient developed for the first time a fever of 101.5 F., and the right kidney became very tender. Two days later a pyelotomy was performed. The perirenal fat was found to be markedly edematous, and because of edema the operator experienced difficulty in working with the tissues of the pelvis.

Without further comment on the solution to be used, it will not be amiss to say a word concerning the proper making of a pyelogram. First of all, the hazards of the procedure should be borne in mind and the cases should be carefully selected. Patients with extensive infection and depressed renal efficiency should be subjected to pyelography with the greatest caution. We feel also that pyelograms in ambulatory cases should not be advised, as a general rule.

When the ureteral catheter has been introduced for this purpose, it should be advanced gently to the upper ureter or pelvis, but not so far into the latter as to produce unnecessary trauma and bleeding. Drainage of the contents of the pelvis for a brief period is then desirable. This is usually accomplished by the collection of specimens for microscopy and culture. The pyelographic medium should be injected slowly, for rapid distention is more productive of pain than is slow distention. Great pressures should be avoided with the utmost care. With this provision, it is of small consequence whether the gravity or the syringe method of filling is used. Indeed, we believe the latter preferable. But the danger of high pressures within the bladder or renal pelvis cannot be overemphasized. The ease with which fluid may be forced from the pelvis into the kidney parenchyma and into the general circulation has been demonstrated repeatedly. The work of Poirier [3] in 1891 is a classic example. In his experiments he introduced water into the ureter, and saw it flow out through the renal vein. Lewin [4] and Goldschmidt, similarly, injected air and produced death from air embolism. There are many such observations in the literature, and we are too apt to forget their significance.

The quantity of fluid to be used is not always easily determined. The practice of waiting upon the patient for the signal of pain in the side is not dependable. Indeed, the production of pain should be avoided. It

3. Poirier, Paul: Compt. rend. Soc. de biol., 1891, pp. 585-587.
4. Lewin, L.: Ueber das Eindringen von Luft aus der Blase in das Herz und die Wege dieser Wanderung, Arch. f. Exper. Path. u. Pharmakol. **40**: 308-312, 1898.

is better to take a plate with from 7 to 10 c.c. as a guide to the amount of further filling, than to subject the patient to the risks of overdistention. When a satisfactory picture has been obtained, the solution should be promptly withdrawn into the syringe, or, if this is not possible, the catheter should be left in situ to facilitate pelvic emptying. Finally, forced fluids, rest and urinary antiseptics will add their share to the comfort and safety of the patient.

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MALIGNANT TUMORS OF THE SUPRARENAL GLAND

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Malignant tumors of the suprarenal gland are comparatively rare, and an early diagnosis is more difficult than that of hypernephroma or other growths occurring in the kidneys. The prompt detection of this condition is, however, of paramount importance, for the patient's only hope of recovery lies in surgical intervention before adjacent structures have become involved or metastases have occurred. The case here reported is of unusual interest from etiologic and diagnostic standpoints. It afforded an opportunity for anatomic and histologic study, in addition to thorough clinical investigation. While correctly designated under the broader term a hypernephroma, it should be classified with the adenocarcinomas.

Adenocarcinoma of left suprarenal gland.

REPORT OF CASE

M. G., a youth, aged 17, a leather repairer, seen in consultation with Dr. Harold Brunn, entered the Mount Zion Hospital clinic complaining of pain in the left upper abdominal quadrant. Except for measles when a child, he had never been sick before. Two hours after lifting a trunk he had been seized with a sharp pain in the left groin, became very weak, and fainted. Operation the following day revealed retroperitoneal bleeding with hematoma. He left the hospital in five weeks. Two weeks later, he complained of a steady, severe, sharp, cutting pain in the upper left abdominal quadrant and left lumbar region. He was taken to another hospital, and the pain disappeared in two weeks. He felt fairly well for seven months, and then had another attack similar to the foregoing. In addition to pain, he now also suffered from anorexia, nausea, marked weakness and slight headache. He was again taken to the same hospital, and operated on by the visiting surgeon. Incisions were made in the upper left lumbar regions, but apparently nothing was found. (A pyelogram taken at this time revealed a lateral elongation and narrowing of the left renal pelvis, together with an absence of the inferior calix.) He had had pain in the incisions since that time. Two months later, he again had a severe attack and was taken to the same hospital, but no diagnosis was made. Two weeks after this attack he entered Mount Zion Hospital, stating that he had awakened that morning with steady, sharp pains over the lines of the incisions. These radiated upward and anteriorly across the abdomen. He also complained of chilly sensations, night sweats, anorexia, indigestion and vertigo. The bowels were regular, but the stools were occasionally tarry. He could not sleep on account of the pain, and had lost 6 pounds (2.7 kg.) in weight. Examination revealed a brownish pigmentation of the skin of the face, and a diffuse mottling over the entire body. A fine tremor of the tongue was present. The right base of the chest moved a little more than the left. When the patient coughed, there was a slight bulging, which started to the right of the umbilicus and extended over the upper left abdominal quadrant and lumbar region. It was most marked in the latter location. The left abdominal reflex was diminished. There was an area of slight hyperesthesia extending from the eleventh dorsal to the third lumbar vertebrae in both lumbar regions. The urine contained an occasional pus cell. The patient left the hospital in four weeks free from subjective symptoms. Examination between the attacks revealed a dilated stomach with peripyloric adhesions, a slight limitation of motion in the left half of the diaphragm, and hyperesthesia on both sides at the level of the eleventh and twelfth dorsal vertebrae.

A diagnosis of retroperitoneal postoperative adhesions following hematoma was made.

About six months later, the patient again entered Mount Zion Hospital complaining of the same symptoms. He stated that he had been free from pain only during three or four short intervals. It had been more marked than usual during the last two weeks. His blood pressure averaged 175 systolic and 120 diastolic. A mass beginning 1 inch to the left of the midline was felt projecting 1½ inches below the border of the ribs. It had a sharp border, and a notch could be detected. The surface was smooth, resembling liver or spleen, and it had a very slight respiratory excursion. There was a slight tenderness, most marked about 2 inches to the left of the midline. Another mass, smooth, rounded and more deeply situated, extended down the left flank, to a point just below the level of the umbilicus. It was difficult to determine whether or not this was a part of the mass previously mentioned. It gave the impression of being an enlarged kidney. There was a patch of dulness with vocal fremitus posteriorly at the base of the left lung. Fluoroscopy revealed the left dome of the diaphragm high and fixed, and the stomach low in the pelvis. The urine occasionally contained a few blood cells, and cellular, hyaline and granular casts. Cystoscopic examination revealed an injected trigon. The ureters were catheterized to the pelves. No urine was obtained from the left kidney on either of two occasions, although three patent catheters were inserted. Clear urine, microscopically negative, was obtained from the right kidney. A comparative urea test of the right kidney and bladder urines showed equal values. Indigocarmin, injected intravenously, appeared on the right side in fourteen minutes; none appeared on the left side in seventeen minutes. Injection of thorium nitrate solution produced the characteristic pain. The resulting pyelogram disclosed marked flattening and transverse elongation of the pelvis, an absence of the calices, and a marked angulation of the ureter.

Operation revealed a large, retroperitoneal, abdominal mass lying below the stomach and splenic flexure of the colon. Inferiorly it extended well down into the loin, medially to the midline, and above beyond reach. It was of the color

of a normal kidney, but varied in consistency, being semicystic below and markedly indurated and nodular above. It was firmly adherent and quite vascular, and was considered inoperable. No fluid was found on puncture of the lower portion with a trocar. On the morning and evening of the fourth day after operation, the patient suffered from attacks of dizziness and convulsions. On return to consciousness five minutes after the first convulsions he was blind, but vision returned in a few minutes. The mass increased rapidly in size, the abdomen and lower chest becoming markedly distended. The feet and legs became edematous.

The patient died eight weeks after operation, twenty-two months after the beginning of symptoms.

Necropsy revealed the abdomen and lower part of the thorax greatly distended. Firm adhesions were found at the base of the left lung. The left pleural cavity was greatly encroached on by the high diaphragm. Extending from below the costal border was the liver, greatly enlarged and irregularly filled with tumor masses. Across this extended the distended, discolored colon. The small intestines were adherent to the anterior abdominal wall and matted together by numerous adhesions. The liver was removed with great difficulty, being adherent to the adjacent tissues, particularly to the diaphragm over the left dome. The stomach was flattened by the pressure of the solid contents of the abdomen. The left flank was occupied by a large, retroperitoneal mass. Across the face of this was the pancreas. The tumor was densely adherent to the diaphragm and posterior abdominal wall, particularly in the region of the scars. It was removed with great difficulty, and with it the left kidney, which was attached to its lower pole. The axis of the kidney ran obliquely upward and outward. No enlarged lymph glands were found. The lungs were collapsed. The left lung was shortened, owing to encroachment of the abdominal contents on the pleural space. In both lungs a few small nodules similar to the main tumor were found near the periphery. The liver was tremendously enlarged and irregularly studded with tumor masses varying in size from a pin point to a baseball. The larger masses were umbilicated, whitish yellow at the periphery, and terra cotta colored and necrotic in the center. The liver tissue was somewhat pale, but normal markings were preserved. The total mass weighed 4,473 gm., and measured 30 by 9 by 3 cm.

Following gentle manipulation, the tumor mass separated readily from the kidney, leaving the latter intact. A depression was noted on the medial face of the kidney, just above the hilum. The capsule of the kidney was not invaded, and stripped from the organ readily. The kidney was flattened with the exception of its lower pole. The pelvis had been obliterated by pressure. It weighed 105 gm., and measured 12 by 7 by 0.75 to 2.5 cm. A small red infarct was noted in the cortex.

The tumor, which was originally ovoid, was absolutely necrotic, and fell apart, allowing the disorganized center to escape. It measured roughly 20 by 18 by 18 cm., and weighed 1,400 gm. As a whole, it was terra cotta, but areas varied from brick red to a pale yellow.

The diagnosis was hypernephroma of the left suprarenal gland.

Microscopically, the tumor was made up of cells in circular groups or in long cords. The groups were separated by very fine connective tissue strands. In some areas there was a distinct perithelial arrangement, and everywhere vascularity was pronounced. No suggestion of lumen formation was found. The individual cell showed a relatively small, deeply staining nucleus, with a relatively large amount of cytoplasm. The latter was much vacuolated. Mitotic figures and giant cells were very frequent.

The picture presented the microscopic characteristics of the suprarenal adenoma type of hypernephroma. The picture lacks the characteristics of renal carcinoma, such as papillary pattern or tendency toward lumen formation.

COMMENT

In this case there seems to have been a definite connection between the trauma and the development of the hypernephroma. An early diagnosis was rendered difficult by the appearance of symptoms so soon after the injury, by the bleeding and hematoma found at the first operation, and because of the negative findings at the second operation. The patient's later symptoms, pigmentation of the skin, tumor mass, weakness and gastro-intestinal symptoms, were, of course, suggestive of a tumor of the suprarenal gland. An interesting feature of this case was the brownish discoloration of the skin, although but one of the suprarenal glands was affected. Another unusual feature was the comparatively slow progress of the disease. The majority of suprarenal tumors progress rapidly after the first symptom has appeared. Adenocarcinoma is infrequent in such a young patient; the average age is 44 years.

Until a comparatively recent period, the majority of both cortical and medullary growths were classed as sarcoma or lymphosarcoma. The latter now, however, are considered to be of neuroblastic origin, and are termed neuroblastoma or neurocytoma. They are derived from the medullary portion of the gland, and usually occur during infancy or early childhood. They assume, in a large majority of cases, one of two forms, the Pepper type, with secondary growths only in the liver, and the Hutchinson type, characterized by metastases most marked in the skull, although the sternum, vertebrae and rarely the long bones and viscera are at times involved. Unlike the neurocytoma, the adenoma, carcinoma and hyperplasia are cortical growths. The tendency of some cortical tumors to reveal sarcomatous properties, however, has been demonstrated.

The etiology of malignant tumors of the suprarenal gland is obscure, although a history of injury is given in about 9 per cent. of these cases. Not unlikely a predisposition to the development of this condition exists, or the progress of a growth already present is accelerated by traumatism.

In a study of seventy-four cases in which my own was included, the following facts of diagnostic significance were elicited: Of seventy cases in which sex was mentioned, forty-two males and twenty-eight females were affected. Thirty-four per cent. occurred in infants or young children, 18 per cent. in patients between 6 and 40 years of age, and 48 per cent. in patients over 40 years old. Of sixty-seven cases in which a definite age was given, the average age was 32½ years. The right suprarenal was involved in 41 per cent., the left in 45 per cent., and both suprarenals in 14 per cent. Metastases occurred early, and were unusually widespread. In this series of seventy-four cases, the liver was involved in twenty-seven, the kidneys in sixteen, the lungs in fourteen, the skull (particularly the orbit, in Hutchinson's type) in eleven, the opposite suprarenal gland in nine, the peritoneum in seven, the brain in five, the lymphatic glands, especially the aortic, bronchial and mesenteric glands in fourteen, the pancreas, heart, mediastinum and ribs in three, the spleen, intestines and diaphragm in two, and the ovary in one case.

The most common subjective symptom of which these patients complained, and the first to appear, was weakness. This was present in about 33 per cent. of the foregoing cases, and was usually accompanied by loss of appetite and often by vomiting and diarrhea. Next to weakness, gastro-intestinal disturbances and pain were the most common complaints, each occurring in about 20 per cent. of this series. The latter occurs when the tumor has attained sufficient size to exert pressure on the surrounding structures. Unlike that

due to pathologic conditions of the kidney, the pain in suprarenal growths usually extends from the lumbar region upward toward the corresponding shoulder, and anteriorly across the abdomen.

The objective symptoms that were noted, in the order of their frequency, were these:

1. A tumor mass, which could be palpated, occurred in 38 per cent. of these patients. When the suprarenal growth has attained sufficient size, the kidney is usually displaced downward and laterally, and it is often possible to feel it in this position. When the suprarenal tumor is large, the kidney may often be felt as a distinct prominence on its surface. Because of its high position behind the ribs, palpation fails to detect a small tumor.

2. Pigmentation occurred in 20 per cent of these patients.

3. Loss of weight occurred in 12 per cent. of them.

4. Hematuria occurred in 9.5 per cent. The latter is much less common than in renal growths, a fact of significance in the differential diagnosis. When present, it is thought to be due to congestion caused by pressure on the renal vein.

5. Elevation of temperature occurred in 8 per cent. of the patients. It is thought to result from necrosis of the tumor.

6. Premature sex development, principally overgrowth of hair, occurred in 8 per cent.

7. Pus, albumin or casts in the urine occurred in 7 per cent. These findings, pointing toward pathologic changes in the kidney, tend to make diagnosis more difficult.

8. As previously mentioned, a flattening and elongation of the corresponding renal pelvis, disclosed by roentgenograms of the injected kidney, was found in our case. This obviously indicates involvement either of the kidney or of some immediately adjacent structure.

Keeping the foregoing subjective and objective symptoms in mind, a correct diagnosis should be made in an appreciable number of cases. As previously mentioned, the patient's only hope of recovery lies in early diagnosis and removal of the tumor before extension and metastases have occurred. Cases of successful extirpation have been reported.

In addition to surgical procedures, the preoperative and postoperative use of deep roentgen-ray and radium therapy should be considered.

Flood Building.

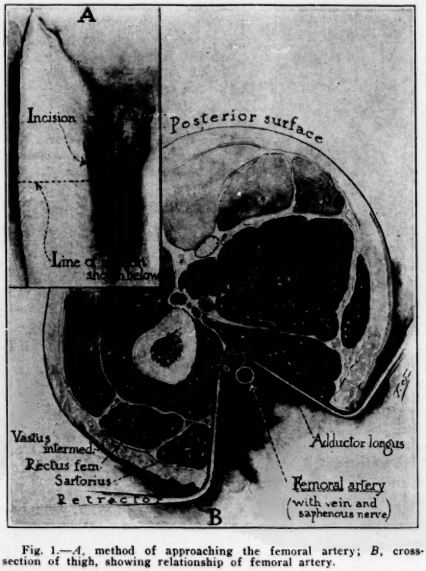

Fig. 1.—*A*, method of approaching the femoral artery; *B*, cross-section of thigh, showing relationship of femoral artery.

Chronic Appendicitis.—That chronic appendicitis may cause dyspeptic symptoms appears to have been first suggested in 1896 by Rutherford Morison.—Hurst, Guys Hospital Reports.

PERIARTERIAL SYMPATHECTOMY

ALBERT E. HALSTEAD, M.D.
AND
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In 1851, Claude Bernard discovered that, when the sympathetic nerve is cut in the neck of a rabbit, the blood vessels in the ear of the same side become very much dilated. He and other observers afterward demonstrated that, if the peripheral (head) end of the severed nerve is stimulated electrically, the ear becomes blanched, owing to a constriction of the blood vessels. Bernard also discovered a second class of nerve fibers, which, when stimulated, caused a dilatation of the blood vessels in the area supplied.

The vasoconstrictor nerve fibers belong to the sympathetic autonomic system, consisting, therefore, of a preganglionic fiber arising in the central nervous system and a postganglionic fiber arising from the cell of some sympathetic ganglion. These nerves form plexuses in the media of arteries and terminate in contact with the muscle fibers. While the terminations of the nerves are in the media, the adventitia, or externa, is spoken of as the nervous layer; for it is into and through this layer that the fibers must pass before entering the media. The adventitia consists of connective tissue, which is denser and contains more elastic fibers in its inner portion. A prominent layer of elastic tissue near the media is called the outer elastic membrane. In the larger vessels, the adventitia contains small nutrient blood vessels, the vasa vasorum, which may penetrate the outer part of the media.

The recent work of Leriche[1] of Lyons has been of great interest and value to those endeavoring to treat vasomotor and trophic disturbances. Leriche has observed that, when the sheath of an artery is removed, one can see, just at the moment its external layer is pinched, that the vessel contracts, its pulse stops, and its size diminishes. If the cellular layer is excised, the diminution in size will progress to one third or one fourth of the normal size of the artery. After from three to fifteen hours, secondary signs invariably appear. These are: (1) elevation of local temperature from 2 to 3 degrees, giving the patient a subjective sensation of heat; (2) elevation of arterial pressure, which may be as great as 4 cm. of mercury, and (3)

1. Leriche, René: Tr. Am. Surg. A. **39**: 471, 1921.

increasing amplitude of oscillations. Leriche says the vasodilator reaction is transitional after periarterial sympathectomy; becomes attenuated from the fifth and sixth day, and disappears after from three to four weeks.

Leriche's operation has been to isolate from 8 to 10 cm. of the artery. The sheath is divided and, with one

Fig. 2.—Exposure of femoral artery.

part held by forceps, the tunica adventitia is dissected away with either a knife or a cannular sound, until the vessel has been completely denuded. This procedure does not injure the main artery wall. Leriche has performed the operation 64 times; in 11 cases of causalgia or equivalent syndromes, 2 cases of painful stumps, 19 cases of posttraumatic contractures, 4 cases of large traumatic edemas, 1 case of trophedema, 4 cases of ischemic sequelae, 1 case of trophic sloughs on a stump, 10 cases of trophic sloughs after nervous section, 1 case of sore of the heel after medullary injury, 1 case of varicose eczema, 1 case of trophic trouble after frostbite, 1 case of spasmodic paralysis, 3 cases of an attempt to modify tension of the cerebrospinal fluid, 2 cases of jacksonian epilepsy, 1 case of goiter, 1 case of intermittent claudication and 1 case of erythromelalgia.

His study of cases leads him to believe that periarterial sympathectomy (1) is often very efficacious in painful phenomena; (2) will influence hypertonic symptoms of muscular phenomena, and (3) is very efficacious in trophic troubles which lead to ulcers.

Following is a case in which periarterial sympathectomy was performed:

REPORT OF CASE

History.—V. P., a sleeping car conductor, aged 55, was admitted to the medical service of Dr. Arthur R. Elliott, St. Luke's Hospital, Chicago, April 6, 1921. A tentative diagnosis of endarteritis obliterans was made by the admitting physician.

Six weeks previous to admission, the patient's right foot began to be painful and feel numb, and these symptoms had grown progressively worse. The pain radiated to the calf of the leg and the ankle felt weak. The patient was unable to walk more than half a block at a time; and, for the last four days and nights, the pain had been excruciating, preventing sleep. There had been no similar attack, and the foot had not swelled. The patient had typhoid fever and "soft chancre" at 17 years of age, but otherwise the history was negative. The family history was also negative.

Examination.—The right pupil was slightly larger than the left, and both reacted rather sluggishly to light and accommodation. The musculature of the extremities was fairly well developed. There was no paralysis, and no tenderness save in the right foot, which was painful when manipulated, and, to a lesser extent, in the right calf, on palpation. The body was otherwise that of a normal, healthy man.

April 9, the blood sugar was 0.091 per cent., the blood urea nitrogen 17.47 mg. per hundred cubic centimeters, and the total nonprotein nitrogen, 38.95 mg. per hundred cubic centimeters. The Wassermann reaction was clearly negative. There were 4,980,000 red blood cells and 10,050 white cells; hemoglobin, 90 per cent. The urine showed a faint trace of albumin, a few hyaline casts, no sugar, and an occasional leukocyte.

Diagnosis.—A diagnosis of endarteritis obliterans was made by Drs. Arthur R. Elliott and George W. Hall.

Treatment.—The patient was given 4 liters of Locke's solution daily by mouth and the duodenal tube, and hot formentations were applied to the foot. He made some improvement.

Fig. 3.—Method employed in removing the adventitia of the femoral artery.

April 26, he was given sodium citrate 120 grains (8 gm.); Locke's solution, 64 ounces (2 liters); potassium iodid, 30 grains (2 gm.); sodium bromid, 20 grains (1.3 gm.), and hydrated chloral, 5 grains (0.3 gm.). After a few days, the sodium citrate, sodium bromid and chloral were discontinued. May 1, nitroglycerin, 1/100 grain, every two hours for eight doses daily, was started, and was continued a week. May 17, thyroid extract, 5 grains (0.3 gm.) twice

daily was started, and, May 19, sodium nitrite, 2 grains (1.3 gm.), every four hours. May 27, the electric oven was tried on the foot, and nitroglycerin was substituted for sodium nitrite. June 4, massage of the leg was started. June 24, 300 c.c. of 0.5 per cent. sodium citrate was given, intravenously. The condition was unchanged throughout.

August 13, the patient was seen by Dr. Halstead, who advised an attempt at periarterial sympathectomy or an amputation. August 24, the patient was transferred to our surgical service.

Operation.—August 26, the femoral artery of the right leg was dissected out so that the junction of the middle and lower thirds was visible. The adventitia was incised with great care and stripped completely off for a distance of 5 cm. The wound healed rapidly and cleanly, and the patient was discharged on the thirteenth day after operation, September 8.

July 21, 1922, ten months after operation, the patient was admitted to St. Luke's Hospital for carbuncle of the neck. Operation of incision and drainage was carried out.

Outcome.—The patient is working as cashier in a restaurant and is on his feet most of the twelve hours that he is on duty. He is able to walk a mile or more. There is no pain in the leg except a slight one if he walks rapidly. Numbness, which was present at the time of operation, has practically disappeared. Before the operation, the patient was unable to do anything, and the pain was most severe when lying in bed. Now there is no pain. The general health is excellent. The leg used to be cold but gets warm in bed now. Tactile and thermal discriminations are normal. The scar is pale and the wound is cleanly healed.

30 North Michigan Avenue—Winnetka Bank Building.

PNEUMOLITH OR BRONCHOLITH *

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The occurrence of pulmonary or bronchial stones coughed up with the sputum is not so common that the observation of a single case on a single occasion does not present data worthy of record. It so happens that just at the time of the appearance of an article on pulmonary calcification by Elliott,[1] two pieces of calcified matter were brought to me by a patient long a sufferer with chronic bronchitis.

The causes, distribution, composition and clinical evidences of pulmonary calculi are well brought out by Elliott,[1] by Wells,[2] by Norris and Landis [3] and by Kidd,[4] but there is no extensive collection of literature. I append to this short report a list [5] of the most important articles since Poulalion's thesis in 1892. A few are not listed because of their inaccessibility.

There are two principal varieties of pulmonary calcification: one that has its origin in a chronic or healed inflammatory area, tuberculosis being usually the cause, and one that is part of the pathologic changes in calcium and phosphorus metabolism whereby these salts are laid down at places of high acid concentration. The latter is a metastatic calcification. The former is usually localized or irregularly distributed, whereas the latter is more uniform and may be universal in the pulmonary tissue, blood vessels and serous membranes. It is also possible for stones to form in bronchiectatic cavities, around a nucleus of organic matter, especially if drainage from the dilatation is imperfect. The case here reported may be explained on the basis of an old calcified tubercle ulcerating through a bronchus, or as a stone originating in a bronchus; from the roentgen-ray report, the former is more probable.

REPORT OF CASE

A man, aged 60, was healthy, until at 30 he developed tuberculosis. This was arrested by a life of three years in the plateau region of the Rocky Mountains, after which he returned to city life, being engaged since then in active practice. He has always been very active in outdoor life as a farmer and hunter, crediting to this the preserved arrestment of the tuberculosis. About ten or twelve years ago he began to have repeated attacks of "grip" at irregular intervals, especially at the times he spent the winter season in Philadelphia. These attacks were accompanied by bronchitis, a condition that became confirmed after a few years. For the last four or five years there has been almost constant cough, with excessive mucopurulent sputum, which comes up in coherent masses. There has also been some hemoptysis, occasionally as blood streaking in the sputum, but more often as fresh clotted blood amounting to as much as 3 ounces. The free bleeding occurred with paroxysmal cough in the morning. In the winter of 1920 I examined the sputum, and found no tubercle bacilli, but large numbers of pneumococci and *Streptococcus equinus*. From this a vaccine was prepared and administered for eight treatments, there being after the first few doses distinct relief of cough and decrease of expectoration. The improvement was not maintained, and the treatment stopped. Examination revealed signs of a bronchiectasis, a diagnosis confirmed by roentgen ray. The roentgenogram revealed bronchiectasis on both sides, but larger in the right upper lobe bronchus. There were several dense shadows in both lungs which might be either calcified areas or fibrosis, and probably a few calcified glands at the hilum. Since this time the pulmonary condition has not improved materially, although life in the South during the winter and in the West during the summer has relieved the severity of the cough, and stimulated the general health. During the last two years the breathing has become more and more labored, amounting to distinct asthma on extraordinary exertion; the latter feature was better this fall because of the patient's careful life and because an easier state of personal affairs permitted more composure.

Physical examinations at repeated intervals during the last fifteen years have given virtually identical findings. Below the right clavicle down to the third interspace there has been slight retraction of the chest, impairment of resonance, and at times a suggestion of a tympanitic note. Breath sounds here have been harsh, but expiration has not been clearly tubular in type. Posteriorly, similar findings were obtained down to the midscapular level, but more distant from the ear. The abnormal signs were always more distinct at the third interspace than at the extreme apex. No diagnosis of bronchiectasis could be made unqualifiedly by physical examination, although this was suggested.

In September, 1922, the sputum was again studied bacteriologically, with the idea of determining whether any organisms present would give a sensitivity reaction by a skin test. The predominating organism was found to be a member of the hemorrhagic septicemia group, and this gave a moderate but still definite reaction when injected, beside a control, into the skin. Injection treatment was started with 25 million, an amount which gave no local reaction but produced decided malaise, the temperature going up to 99.2 F. (this man's thermometric record is always normal or below), slight increase of cough, which was not harassing, with easier expectoration. Because of the temperature rise, the foregoing dose was continued three times at intervals of five days with always the same result, though diminishing in intensity. Attempts at increasing the quantity had no good effect. After the second reaction the patient brought two fragments of calcareous matter coughed up during the night with mucus but not wholly enveloped by it. No especial effort was required to raise the stone. The patient thinks that they probably represent one stone broken by his teeth. The one retained as museum specimen is 4 by 3 by 2 mm., quite

* From the William Pepper Laboratory, University of Pennsylvania.

1. Elliott, A. R.: Bronchiolithiasis, J. A. M. A. **79**: 1311 (Oct. 14) 1922.
2. Wells, H. G.: Chemical Pathology, 1920, p. 468.
3. Norris and Landis: Diseases of the Chest, 1920, under Calcification of the Lungs.
4. Kidd, in Allbutt: System of Medicine **5**: 338.
5. This list of articles is omitted in THE JOURNAL, but will appear in the reprints, a copy of which will be sent by the author on request.

irregular, rough and without facetiæ or capsule. The smaller piece on examination showed traces of calcium carbonate, calcium oxalate and magnesium phosphate; there was also a little organic matter. It is interesting to note that this man has maintained for several years that there was in his lung a foreign body, he being conscious of the presence of a peculiar sensation indicating the existence of something that should not be there.

OTITIS MEDIA COMPLICATING OPERATIONS ON THE GASSERIAN GANGLION *

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Otitis media complicating operations on the gasserian ganglion was first observed in the Mayo Clinic about three years ago, in a patient who complained of a sense of fulness and deafness following section of the posterior root of the gasserian ganglion for trifacial neuralgia. Since then, such observations have been made several times. This type of otitis media occurs from a few days to several weeks after operation on the gasserian ganglion. The chief complaint is a sense of fulness and deafness on the side on which the operation is performed. Otalgia is never severe, and is not a common complaint. Examination of the ears discloses a fulness in the inferior quadrants of the tympanic membrane, with more or less obliteration of the common landmarks. There is usually a fluid level, and a bubbling sound is heard with inflation of the eustachian tube. Two patients said that they had "water in the ear." The tympanic membranes were pale in each instance. In this condition, there also appear within the middle ear bleblike formations without evidence that the remainder of the cavity contains fluid. The tympanic membrane is gray or pink, and does not contain generalized fluid. It is flaccid or atrophic in appearance, is not intensely red, and never has the sense of resistance with the otoscope. Deafness, as tested by tuning forks, was of the conduction type and was not severe. The posterior superior wall of the canal did not droop.

In classifying the pathologic conditions in the middle ear in cases of otitis media, the question arises whether the fluid is exudate or transudate. Because of the close association and connections of the tympanic plexus in the mucous membrane of the middle ear with the branches from the gasserian ganglion, as described here, it is definitely established that the fluid is the result of an altered condition of the mucous membrane consequent to the operation. It is accepted that the operation results in a trophic disturbance in the mucous membrane of the middle ear, causing the collection of fluid. I believe that this type of otitis media is due to the secretion of the fluid; but the point cannot be definitely established. Animal experimentation as a means of investigation might have been feasible, except for the fact that the results of section of the posterior root of the gasserian ganglion in animals not suffering from trifacial neuralgia would not be parallel to those following a similar operation on patients with a definite disturbance of the sensory root, or of the gasserian ganglion, as in the cases here reported. It was therefore concluded that such investigation would not be of value.

In one case observed (Case 1), secretory otitis media followed alcohol injection of the posterior root of the ganglions. Spontaneous rupture and secondary infection, resulting in suppurative otitis media, occurred. It is also of interest that the posterior root was injected, since the neuralgia disappeared at once and cutaneous anesthesia followed.

In another case of secretory otitis media, not reported because the condition occurred several weeks after the patient went home, so that our information was not definite, suppuration occurred, but cleared up promptly. This man had a corneal ulcer, as did one other patient.

Abrasions of the cornea are not uncommon following operations on the gasserian ganglion; two of this series of patients had corneal ulcers. I am unable to determine whether such ulcers are due to trauma or purely to trophic local changes. Both causes may exist and possibly a combination of the two, namely, lowered local resistance due to the trophic changes, with subsequent trauma from dust and other foreign materials. Although goggles of the automobile type are worn by such patients postoperatively, trauma cannot be ruled out definitely.

In many respects, the picture of otitis media due to trophic disturbances following gasserian ganglion operations simulates herpes zoster otiticus, differing chiefly, however, in that pain is absent in the former and severe in the latter; also, the bleb formations on the pinna are absent in this form of otitis media.

NERVE CONNECTIONS

Sensory and trophic nerve supply to the mucous membrane of the middle ear is abundant, and it is directly connected with the sensory root of the gasserian ganglion. The tympanic plexus in the middle ear also has direct connection with the posterior root of the fifth cranial nerve, the sphenopalatine ganglion and the cervical sympathetic nerves.

The sensory nerves to the external auditory canal are derived from the auriculotemporal branch of the trigeminus, and from the auricular branch of the pneumogastric. The latter, also known as Arnold's nerve, perforates the wall of the meatus, and supplies its lining membrane.

The posterior wall is separated from the mastoid process by the tympanomastoid fissure. The auricular branch of the pneumogastric nerve passes through this fissure to the posterior wall of the canal. The coughing, sneezing or vomiting that sometimes follows irritation of the canal, as from cleaning the ear, or examining it with instruments, is said to be due to a reflex effect on the pneumogastric nerve through this branch. The auriculotemporal branch of the trigeminus nerve enters into its supply, and may explain the earache that occurs in cases of cancer of the tongue or disease of the lower teeth.

The nerve supply of the tympanic membrane is derived chiefly from the auriculotemporal branch, supplemented by twigs from the tympanic plexus and by the auricular branch of the vagus. They accompany, for the most part, the blood vessels and, besides supplying the latter, form a subcutaneous and a submucous plexus. The tensor tympani and tensor palati muscles receive their nerve supply from the same source, namely, the trigeminus, through the otic ganglion.

The nerves supplying the mucous membrane of the tympanum are branches from the tympanic plexus,

* From the Section on Otolaryngology and Rhinology, Mayo Clinic.

formed by the tympanic branch of the glossopharyngeal nerve, in conjunction with sympathetic filaments from the network accompanying the carotid artery. The tensor tympani muscle receives its supply from the trigeminus, the stapedius from the facial. Although the chorda tympani nerve has an intimate topographic relation to the space which it traverses close to the outer wall, it gives no filaments to the structures within the tympanum. The nerves of the eustachian tube are supplied from the tympanic plexus and from the pharyngeal branches of the sphenopalatine ganglion.

The tympanic nerve, or Jacobson's nerve, arises from the petrous ganglion and traverses a tiny canal in the osseous bridge between the jugular fossa and the carotid canal. Entering the tympanic cavity and receiving fibers from the carotid plexus of the sympathetic by way of the small deep petrosal, the tympanic nerve passes upward and forward in a groove on the promontory, and breaks up in this situation to form the tympanic plexus. After distributing filaments to the mucous membrane lining, the tympanic cavity and the associated air spaces (mastoid cells and eustachian tube), its fibers reassemble, and join with a filament from the geniculate ganglion, to continue as the small superficial petrosal nerve to the otic ganglion.

The branches of the tympanic nerve are the small superficial petrosal nerve, the branch to the fenestra ovalis, the branch to the fenestra rotunda, the branch to the eustachian tube, the branch to the mastoid cells, and the branch to the great superficial petrosal nerve.

The auricular branch of the vagus is given off from the ganglion of the root. It receives a filament of communication from the petrous ganglion of the ninth nerve, and follows the outer margin of the jugular foramen to an opening between the stylomastoid and jugular foramina. Entering this foramen, it traverses a canal in the temporal bone which crosses the inner side of the facial canal, and terminates between the mastoid process and the external auditory meatus. Leaving the canal, the nerve supplies the skin of the posterior part of the auricle and of the posterior inferior portion of the external auditory meatus. While traversing the temporal bone, the auricular nerve communicates with the facial and, after reaching its arc of distribution, with the posterior auricular nerve.

The communicating branch of the facial nerve to the tympanic plexus traverses a tiny canal in the temporal bone to reach the tympanic cavity, where it joins the main continuation of the tympanic plexus of the glossopharyngeal to form the small superficial petrosal, and proceeds to the otic ganglion, which it enters, as a sensory root. The fibers from the tympanic plexus, probably secretory in function, are distributed from the otic ganglion to the parotid gland.

REPORT OF CASES

CASE 1.—Mr. S. A. H., aged 48, complained of severe pain throughout the left side of the face, which was recognized as trifacial neuralgia. July 28, 1922, the patient was relieved by a preliminary alcohol injection of the sensory root of the fifth cranial nerve. He returned in about two weeks for recurrence of the severe pain. Examination of the ears was negative. August 10, a gasserian ganglion operation was performed on the left side, the posterior root being cut. Three days after operation, the patient complained that his left ear felt full. This feeling persisted, with slight deafness.

Examination revealed the right ear to be normal; the left tympanic membrane was pale; the lower quadrants were bulging, and the upper were normal. Motion of the tympanic membrane with an otoscope confirmed the patient's suspicion that there was water in the ear, because the fluid could be seen to move. Changing the position of the head changed the relation of the fluid level to the ear landmarks. Eustachian tube inflation caused a bubbling sound. Functional test of the hearing revealed a slight conduction type of deafness. There was no otalgia at any time. Paracentesis was not necessary, and the patient was dismissed from observation three days later. August 18, he wrote that symptoms of fulness and deafness were decreasing. The fluid level was lower.

CASE 2.—Mr. W. B., aged 48, had typical trifacial neuralgia. The ears were normal. Three alcohol injections were given on the right side, May 28, Dec. 15 and Dec. 19, 1921, respectively. The last injection afforded relief, but the patient had a sense of fulness and deafness in the right ear. The ear ruptured spontaneously, and a thin, watery fluid escaped. No further treatment was necessary. December 29, a gasserian ganglion operation was performed, the right sensory root being sectioned. Three days later, before the primary dressing was changed, the patient complained of slight pain in the right ear, soon followed by a spontaneous discharge of clear fluid.

Examination revealed a pale tympanic membrane, slightly full in the lower quadrants, with a posterior inferior perforation, and a thin fluid pulsating through the opening. This clear fluid became definitely purulent on the following day, by secondary infection. Slow but steady improvement ensued. Jan. 14, 1922, when the patient was dismissed from observation, the tympanic membrane was retracted and the perforation healed, and subjective and objective symptoms had entirely disappeared.

CASE 3.—Mr. F. N. B., aged 65, had trifacial neuralgia, Preoperative examinations revealed normal ears. July 30, 1921, the right sensory root of the gasserian ganglion was sectioned. About nine days later, the patient complained of fulness and slight deafness in the right ear.

The typical pale membrane, with slight fulness in the lower quadrants and the slight deafness typical of the condition, was present. There was no otalgia; paracentesis was not considered necessary. The patient was seen daily, and the ear rapidly cleared. He also had a corneal ulcer in the right eye which was typical in its resistance to local treatment. Further trauma was eliminated by the use of a glass eyeshield.

CASE 4.—Mr. T. E. G., aged 68, had a right gasserian ganglion operation for trifacial neuralgia, May 19, 1921. The sensory root was cut. The findings in the ears were negative. The patient was dismissed from observation without complications. However, a letter from his home physician reported that he had subsequently developed right otitis media, which spontaneously ruptured and became secondarily infected. He also developed a right corneal ulcer. Both resisted local treatment. A later letter, December 19, stated that both the ear and the eye were almost cured.

COMMENT

Four other cases belong to this series, but, since a personal examination was not made, they are not incorporated in this report. Case 1 was typical in every detail, and most interesting. It should be noted, however, that all the patients had complete relief from the pain after operation. They also had cutaneous anesthesia over the surface supplied by the posterior root of the ganglion. It should be noted, further, that two of the four patients had trophic disturbances in the form of secretory otitis media and corneal ulcer. This again brings up the question of the factor of trauma in these cases of postoperative corneal ulcers.

SUMMARY

1. Secretory otitis media following operation on the gasserian ganglions is an entity. It is probably due to trophic disturbances in the mucous membrane of the middle ear.

2. The nerve connections between the gasserian ganglion and the mucous membrane of the middle ear are abundant.

3. The ear and eye complications are always on the side on which the operation is performed.

4. Trauma, as an etiologic factor, is eliminated so far as the ear is concerned, and this gives further basis to the argument that the corneal complications are entirely trophic in origin.

5. The process may be similar to that occurring in a herpes zoster otiticus.

SPASMODIC FORCED RESPIRATION AS A SEQUEL OF EPIDEMIC ENCEPHALITIS

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NEW YORK

The protean character of the sequelae of epidemic (lethargic) encephalitis has come to be well recognized as evidence of its involvement of almost any part of the brain or spinal cord. Its syndromes are legion, and it bids fair to rival neurosyphilis as a waste basket for the vagaries of neurologic diagnosis.

During the last year, certain disturbances of the respiratory mechanism have come under my observation as a sequel to epidemic encephalitis, which have resulted clinically in disorders of breathing of a very bizarre nature. In each instance, the symptoms have conformed to the same general pattern, but there has been a different coloring as far as the individual respiratory difficulty was concerned.

We are all familiar with the dyspnea that accompanies respiratory or cardiovascular diseases, the toxemias and the well known Cheyne-Stokes respiration. Quite different in all their characteristics are those disorders of respiration to which encephalitis has given rise. These are more in the realm of disturbances of rhythm and amplitude than of rate, though tachyrespiria is also present.

The literature on this disease contains no histories of cases similar to those reported here, though several writers mention respiratory syndromes following encephalitis. Aronson [1] reports the case of a young child who developed a persistent rapid respiration, about 45 a minute, accompanied by certain character and psychic changes. Grossman [2] mentions in his review of the sequelae that three patients complained of difficulty in breathing without any pathologic condition in the lungs. Hoover [3] reports an unusual case of inspiratory dyspnea due to paralysis of the dilators of the nares, which was relieved by raising the nares. Barker [4] says that peculiar disturbances, such as tachypnea, irregular respiration and paroxysms of deep breathing, are seen, and specifically notes one of these cases which was accompanied by a tetanic attack.

This peculiar respiratory disorder varies considerably as to its time of onset, following the acute disease in some instances in four months, in others more than a year. It does not begin suddenly, but gradually develops to a maximum point, where it maintains a fairly constant level.

The type of case described by Aronson has also been noted by me and is a type of respiration in which the rate is over 40 and the effort loud and labored, suggesting the panting of a dog.

The other cases, five of which have come under my observation, are different, in that there are intervals of normal breathing interspersed with occasional outbursts of abnormal respiration. Without any premonitory feelings other than, perhaps, slight dizziness, the patients complain that they feel compelled to take a deeper breath; that something is compressing the lower chest which interferes with adequate depth of breathing. The breathing, therefore, suddenly becomes deeper and more rapid, usually between 40 and 45 a minute. The effort is marked, inspiration being voluntarily long and deep, with all the accessary muscles called into play. Expiration is also voluntary and labored, frequently ending with a noticeable grunt. During these spasmodic paroxysms, the mental attitude is obviously one of distress and anxiety, suggesting that which is sometimes seen in vagal attacks, and is concentrated on the difficult breathing. Conversation is avoided, and, if the breathing is voluntarily interrupted, the succeeding respirations appear to be more violent, as though to compensate. There is marked restlessness accompanying the paroxysms; the patients become uneasy; the hands are clenched and unclenched; the musculature throughout the body may become tense and rigid; often they lie down, sit up, stand up and then bend forward or backward, depending on the impulse of the moment.

Weakness predominates during the attacks, and, if standing, the patients will lean against the wall, assuming unusual postures. Yawning is a frequent accompaniment. A child showed psychic accleration with the attack; another patient, marked depression; while in two the attack seemed to terminate in a slight transient cyanosis accompanied by a period of apnea. One of the two, during the height of the attack, arched his back, clenched his hands, and appeared about to have a true convulsive attack. There were, however, no clonic movements and no loss of consciousness at any time, though noticeable pallor, followed by cyanosis and irregularity of the pulse, were present.

These attacks terminate as abruptly as they begin, usually after from five to fifteen minutes' duration there being none of the crescendo, diminuendo quality noticeable in the Cheyne-Stokes respiration. Their frequency is variable, occurring three or four times a day, and often just before sleep at night.

The paroxysms are increased by any emotional stimulus, and also by inactivity; for when the mind is diverted or exercise is being taken, they do not seem to be initiated.

These attacks are likely to be free from other physical signs, though the heart rate was shown by the electrocardiograph, in one case, to exhibit a marked sinus arrhythmia, and in the most severe case there was a temporary loss of the pulse in the wrist at the height of the attack.

The inevitable diagnosis in all these cases had been hysteria, but all except one patient, on careful questioning, gave a clear-cut history of a febrile disease, with perversion of sleep and other localizing intracranial signs.

1. Aronson, L. S.: Encephalitis with Unusual Sequelae, Neurol. Bull. **3**: 113 (March) 1921.
2. Grossman, Morris: Sequels of Acute Epidemic Encephalitis, J. A. M. A. **78**: 959 (April 1) 1922.
3. Hoover, C. F.: Inspiratory Dyspnea Due to Paralysis of Dilators of Nares Following Acute Infectious Meningo-Encephalitis, J. A. M. A. **78**: 966 (April 1) 1922.
4. Barker, L. F.: Sequelae of Epidemic Encephalitis, New York State J. Med. **22**: 251 (June) 1922.

Two of the patients showed as residuals the familiar thalamic facies, staring eyes with lack of emotional tone and tendency to the mask. They also showed pupillary irregularities, and one, a persistent insomnia.

Therapy in these cases was of no avail, though one case was improved by moderate doses of phenobarbital (luminal).

REPORT OF CASE

History.—A. W., a man, aged 22, single, seen June, 1922, had had a severe head cold in February, 1921, which made him feel quite sick but did not put him to bed. During and after this illness he had some tendency to prolonged sleeping, which, after several months, turned into a partial sleep inversion. This had persisted off and on up to the time of examination, the patient falling asleep readily during the daytime, but suffering from insomnia at night, often reading the whole night. At the termination of this acute illness, he began what at first was considered a habit of coughing, which had persisted until the present time. The breathing was forced and labored, coming on rather rhythmically in paroxysms of five minutes' duration, with about five minutes' intermission. It was inhibited by diverting the mind and by taking an interest in something, while any emotion intensified it. The attacks were characterized by rapid, deep respiration, chiefly through the mouth, with some distortion of the facial expression, and the use of the accessory respiratory muscles. Expiration was forced and accompanied by a noisy coughlike grunt. Extreme fatigue followed each paroxysm.

There was a period of several months about a year after the acute illness when he was bothered by excessive perspiration, and during the past year he had had no ambition or "pep." Activity was an effort, and he desired to sit around all day. He had done no work, and was inattentive and forgetful. His family had noticed that he stared more, and that there was a change in his facial expression. There was at no time diplopia, myoclonia or pains.

Examination.—This revealed widening of the palpebral fissures, producing some strain of the eyes, with a noticeable blankness of expression and emotional play over the face, especially the upper part (thalamic facies). There was no impairment of voluntary movement. The pupils were slightly unequal, but regular in outline and reacted to light and accommodation. Other than the respiratory difficulty described in detail above, the patient was free from physical signs.

Summary.—This case presents a typical but definite history of an acute epidemic encephalitis, with acute onset and some lethargy, followed by inverted sleep mechanism, thalamic involvement, as seen in the facies, retarded physical activity (movement), and evidence of autonomic disturbance in the period of excessive perspiration and the paroxysms of forced respiration.

COMMENT

It seems almost impossible, with our present knowledge of the respiratory mechanism, to postulate a localization for this interesting autonomic disturbance; but it is unquestionably rhythmic and automatic, two functions usually attributed to that system. Its freedom from medullary signs would rule out the bulb as the site of the lesion.

The marked emotional element in these attacks, the psychomotor excitation, the disturbance of the sleep mechanism and the ironed out facies predicate an unquestionable thalamic lesion.

Von Monakow recently described in detail his conception of a continuation of the sympathetic chain up through the pons to the thalamus, where it has a large nucleus, and thence to the postparietal cortex as its end station. Under the influence of such data and knowing the numerous other autonomic sequelae of encephalitis, we can suggest for future observation a center in or near the thalamus which is part of the respiratory functional control, this seeming particularly to regulate its rate and rhythm. It seems possible that it is such a function which is diseased in this unusual postencephalitic respiratory syndrome.

NOTE.—Since this article was written, there has been reported [5] a series of five cases with a postencephalitis respiratory syndrome. These occurred in children, and unquestionably describe a clinical syndrome similar to the one that I have described in adults.

74 West Forty-Eighth Street.

Clinical Notes, Suggestions, and New Instruments

A UNIQUE CASE OF COEXISTENT TUBERCULOSIS AND SYPHILIS IN THE GENITAL TRACT

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Urologist, Monmouth Memorial Hospital

The fact that tuberculosis and syphilis frequently coexist in a patient is attested by experience.

REPORT OF CASE

History.—J. S., a colored man, aged 48, a laborer, single, admitted to the urologic service, Aug. 3, 1921, complained of swelling in the left inguinal region of two months' duration, starting with swelling in the corresponding testicle and traveling to the groin.

Physical Examination.—There was a swelling in the left inguinal region about the size of a small egg, indurated in character, with a slight amount of tenderness present. There was slight involvement of the neighboring gland on each side of the swelling. The left testicle felt normal, but the epididymis was enlarged, hard and somewhat tender, with distinct small nodules on the vas, which also felt thickened. The right testicle was involved in a small mass, and presented several small distinctly nodular spots on its surface. The epididymis on this side seemed also to be involved, but the vas did not feel nodular and was not much thickened. The patient's temperature varied from 98 to 99 F. The urine showed albumin, a few hyaline casts with an occasional cylindroid, and a few leukocytes, with some epithelial cells. No tubercle bacilli were found. Blood examination revealed: hemoglobin, 85 per cent.; color index, 0.77; red blood cells, 5,500,000; white blood cells, 7,200; small lymphocytes, 25 per cent.; large lymphocytes, 11 per cent.; polymorphonuclear neutrophils, 59 per cent.; eosin, 4 per cent.; basophils, 1 per cent.; Wassermann reaction, four plus. A roentgenogram of the chest revealed considerable widening of the aorta in the region of the arch, and lung infiltration of the right apex.

A working diagnosis was made of bilateral tuberculous epididymitis, with probable extension into the right tunica vaginalis.

Operation.—On the ninth day after admission, the left side was operated on, an epididymovasectomy with enucleation of the enlarged inguinal gland on that side being performed. The epididymis was hard, enlarged and indurated. The testicle was soft and rather friable, and the vas was thickened and slightly nodular. During the attempt to dissect the inguinal gland, it ruptured, and about half a dram of purulent material flowed out. The gland itself was tightly adherent to the surrounding structures. At this stage, the patient did not appear to be doing well, so the right side was left for future operation. The epididymis, inguinal gland and vas were sent to the laboratory, and a diagnosis of tuberculous epididymitis was made.

Course and Treatment.—Convalescence was uneventful except that it was somewhat protracted by the discharge from and breaking down of the wound in the inguinal region. The patient returned home, September 3, with the intention of returning later for operation on the right side. Anti-

5. Parker, H. L.: Disturbances of the Respiratory Rhythm in Children: A Sequela to Epidemic Encephalitis, Arch. Neurol. & Psychiat. 8: 630 (Dec.) 1922.

syphilitic treatment was begun in the urologic clinic, September 10. Up to the time of his readmission for the second operation, he had received six intravenous injections of neo-arsphenamin, 0.6 gm. each, and two intramuscular injections of mercuric salicylate, one of one grain and one of one-half grain.

This treatment was interrupted after October 21, because the patient failed to return.

Second Operation.—December 6, he was readmitted to the ward, complaining of pain in the right side of the scrotum, which was rather sharp at times. Otherwise, he felt quite well. The physical findings were the same as before, except for the scar of the first operation. The next day, the right testicle, epididymis and cord were exposed and removed, along with an old fistulous tract leading from the lower pole of the epididymis to the skin surface on the anterior portion of the scrotum. The vas deferens was thickened and the epididymis nodular. The testicle on section had a fibrogelatinous appearance. There were several small cysts, which resembled blebs, on the surface of the testicle. These contained straw colored fluid. On laboratory examination, the testicle showed chronic productive interstitial inflammation with hyalinization of the seminiferous tubules, characteristic of syphilitic orchitis. There was dilatation of the epididymis tubules, and regenerative hyperplasia of the efferent ductules and of the interstitial cells also characteristic of syphilis, The diagnosis was syphilitic orchitis.

Outcome.—An uneventful recovery ensued, and the patient was discharged about December 22, reporting to the clinic on the 23d and continuing treatment until March 3, 1922, during which time he received eleven intravenous injections of neo-arsphenamin, each 0.6 gm., and eight intramuscular injections of mercuric salicylate, each one-half grain. During this time, he had two more Wassermann tests, one, Dec. 30, 1921, two plus, the other, March 3, 1922, four plus.

He has not returned for further treatment, but has been seen by me several times since last March. To all appearances, he is doing well, having gained in weight noticeably. As far as I know, he is doing his usual work.

COMMENT

Here we would seem to have a pure tuberculous process on the left side and a pure syphilitic process on the right side. It is this feature of the case which makes it of more than passing interest.

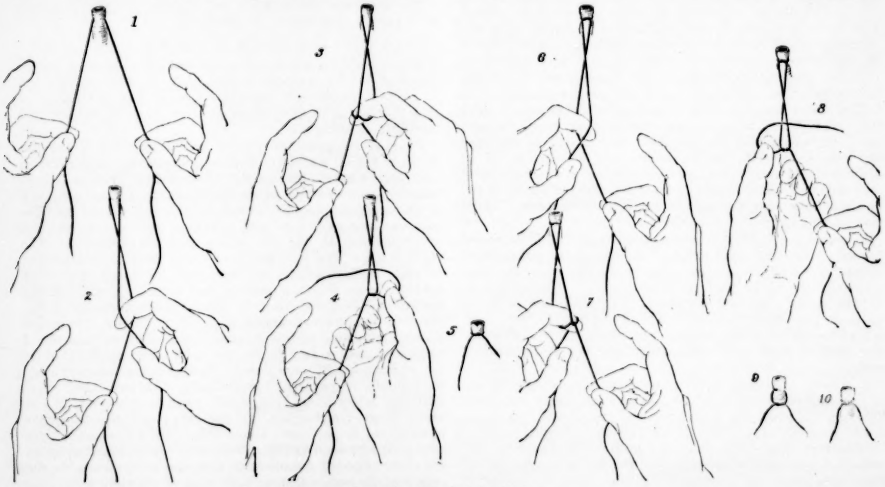
I should like to call attention to two things which were discovered on examination: (1) probable involvement of the right lung at the apex, as developed by the roentgenogram, probably a tuberculous process, which may have been the forerunner of the genito-urinary tuberculous condition, and (2) the presence of the sinus, which communicated with the surface of the scrotum on the right side. This was entirely healed, but would lead one to suspect tuberculous involvement on that side. To offset this, there was the pathologist's report, which nowhere mentioned tuberculosis in connection with the material sent him, which consisted of the entire removed specimen.

148 Broadway.

THE TECHNIC OF A KNOT

WALTER J. SULLIVAN, M.D., CHICAGO

The accompanying illustrations present the technic of a knot which I have been using for the last two years. A short piece of catgut can be used in the tying of the knot, and a reef or flat knot can be accomplished by the technic, as illustrated. A strand of catgut or linen from 6 to 7 inches in length can easily be used, and the accompanying results obtained.



Successive steps in tying knot.

As far as I know I have not seen this particular technic illustrated anywhere, and in reply to my inquiries many men who have done quite a bit of technical work state that they have not seen it in print or in any illustrations.

Frequently small pieces of catgut are left from suture material, and these can be utilized to tie the knot. Long strands of catgut, as illustrated here, do not work as well as short strands.

2550 Prairie Avenue.

Physician Versus Cobbler.—The *Deutsche medizinische Wochenschrift* quotes a letter in the daily paper from a physician who wrote that he had just been paid by the insurance society for his medical services for the last three months, and his fees included one for medical examination and six office treatments of a certain shoemaker at 12 marks each, total 72 marks. The same day, the shoemaker returned to him a pair of shoes he had been repairing, with the bill, 1,000 marks.

METHOD FOR PREPARING BLUE CELLULOID INJECTION MATERIAL *

JOHN ALBERT MARSHALL, D.D.S., PH.D., SAN FRANCISCO

This note refers to those anilin dyes which may be used for coloring specimens prepared by the celluloid injection method.

In a study of the anatomic relations of the salivary glands, it became of interest to inject simultaneously the gland substance through the excretory duct, and the arterial blood supply through the common carotid artery. The red dye used for the injection of the arteries is the usual substance employed for this purpose, namely, alkanin. This material in various dilutions does not afford a sufficient contrast for the study and comparison of the small excretory ducts and the capillaries. The gross relationship is more clearly indicated when two colors are used. The difficulty seems to be due to the necessity of macerating the injected specimens in concentrated hydrochloric acid, and subsequently washing away the débris. In this manner, the injected masses are freed from the overlying hard and soft tissues. A search of the literature failed to find a description of any blue dye which would withstand the action of the concentrated hydrochloric acid. The color of alkanin is not changed during digestion, but apparently no blue dye has been described with properties identical in this respect to the red dye.

A combination of dyes may be used, however, which, although temporarily discolored by concentrated hydrochloric acid, regains a distinct hue when washed in water. Such dyes are, for example, crystal violet and brilliant green. A 10 per cent. solution of both of these dyes is made in acetone and used for coloring the celluloid preparations. Subsequent digestion of the injected material by means of concentrated hydrochloric acid decolorizes the dye temporarily. When digestion is complete and the injected mass washed with water, the color returns.

The great advantage of these dyes is apparent in experimental work requiring simultaneous injection of different systems or of different structures.

REPORT OF CASE OF OBSTRUCTION TO INTESTINE DUE TO ASCARIS

W. P. BAUGH, M.D., ALBANY, ALA.

In this case *Ascaris lumbricoides* caused an obstruction of the small intestine, necessitating resection.

Miss R., aged 36, referred by Dr. Mouldon Smith of Ardmore, Tenn., was admitted to the Benevolent Society Hospital at Albany, Ala., Nov. 6, 1922, with intense pain in the abdomen, in the right hypochondriac region. She was poorly nourished, was suffering great shock, and presented all the symptoms of an intestinal obstruction.

The history was negative except that she had had several attacks of pain in the abdomen for the last two years which had been diagnosed as subacute appendicitis.

A median abdominal incision was made. When the abdominal cavity was entered a considerable portion of the ileum was seen to be collapsed, with a definite line of demarcation at each extremity, with beginning gangrene. A large mass was observed; radiating from this mass, there were cordlike structures in the intestine extending from both sides of the mass.

The diagnosis of *Ascaris lumbricoides* was made, and approximately 70 cm. of the ileum removed at its middle third. An end-to-end anastomosis was performed.

In the removed section of intestine there was a large mass of *Ascaris lumbricoides* consisting of nine worms matted together, the longest one measuring 27 cm. and the shortest one 12 cm. The largest of them was dead, and the others were wrapped about it.

The patient was dismissed from the hospital, November 21, after an uneventful recovery.

* From the George Williams Hooper Foundation for Medical Research, University of California Medical School.

Special Article

THE CARE AND FEEDING OF INFANTS

(*Continued from page 109*)

[NOTE.—This is the third of a series of articles on the care and feeding of infants. It is addressed to the general practitioner rather than to the pediatric specialist. When completed, the series, somewhat elaborated, will be reprinted in book form.—ED.]

MIXED FEEDING AND WEANING

The main indications for mixed feeding are: 1. To furnish sufficient food to meet the infant's needs when the mother's supply becomes inadequate. This is best accomplished by *complemental feeding* by the administration of cow's milk mixture after a limited period on the breasts. 2. To relieve the mother of one or more breast feedings to provide for her recreation. 3. To teach the infant bottle feeding in the preparation for emergencies. The two latter conditions will necessitate replacing breast by bottle meals. These are known as *substitute feedings*. Whichever of these two methods of extra feeding is adopted, the all important question to be answered for the mother is what foods and how much of them shall be given to replace the breast milk. It has been stated that average infants will require amounts approximating 2½ ounces (75 c.c.) for each pound of body weight, of breast milk in twenty-four hours.

It is necessary to weigh the infant before and after nursings for one or more days to obtain a fair idea of the amount of cow's milk mixture that it will be necessary to administer in cases of underfeeding at the breast. Example: Given a normal infant weighing 10 pounds (4.5 kg.), the food value of 25 ounces (700 c.c.) of breast milk should be approximated (one sixth of the body weight). Comparative determinations of human and cow's milk show, on an average, fat, 3.5; protein, 1.5; carbohydrate, from 6 to 7.5 in the former, and fat, 4.0; protein, 3.5; carbohydrate, 4.5, in cow's milk.

Clinical experience has taught us that most infants will thrive on artificial mixtures approximating the food values contained in breast milk. Roughly, 1½ ounces (45 c.c.) of cow's milk to which ⅒ ounce (3 gm.) of sugar (cane or milk)[6] and 1 ounce (30 c.c.) of water has been added, will meet the requirements for each pound of body weight (0.54 kg.).

It is a safe and rational plan to think of the infant's needs in grams of fat, protein and carbohydrate for each pound of body weight. The breast-fed infant receiving 2½ ounces per pound receives, fat, 2.6; protein, 1.1, and carbohydrate, 5.0 gm., daily for each pound of body weight. These values are approximated by 1½ ounces of cow's milk with ⅒ ounce of sugar and 1 ounce of water added (fat, 1.8; protein, 1.57; carbohydrate, 5.0). Example: A 10-pound infant receiving 15 ounces of breast milk is receiving 2½ ounces for each 6 pounds of his body weight, and will require in addition the equivalent of 2½ ounces of breast milk for each of 4 pounds of body weight, which can be supplied by 6 ounces or one and one-half times four of cow's milk, and ⅒ ounce of sugar.[6] To meet

6. Two level tablespoonfuls of cane sugar equal 1 ounce; 3 level tablespoonfuls of milk sugar equal 1 ounce.

his water requirements, the mixture should be made 10 ounces, adding 4 ounces of boiled or cereal water.[7]

The cow's milk mixture can be divided into equal parts to be given from the bottle as complementary feeding following the breast nursings.

The exception to these food requirements is the thin infant whose substitute feedings must approximate the requirements of his full weight for his age. It is to be remembered that small *fat* infants require less total food than large infants of the same age. (Further details for artificial feeding will follow.)

Food Other Than Milk Mixtures.—Most infants may be given small quantities of orange juice during the third month of life, even though they are exclusively breast fed. During the fourth month, small quantities of well-cooked cereals can be started, and during the early part of the second half year a vegetable and meat broth may be started to advantage. These additions may be made to the diet even when the breast milk supply is sufficient to meet the caloric requirements. Besides rounding out their diet, they prepare the infant to meet the emergencies of a diminishing breast-milk supply.

WEANING

Weaning should always be done gradually, when possible, for the sake of both mother and child. The first months in the life and development of a child are the most critical period. Weaning at this time is a serious matter. A well baby after he is 6 months old can, as a rule, be successfully weaned when necessary, if it is properly done. However, at least part breast feeding should be continued throughout the next three months, or even longer, if possible, depending on the infant's health, the season and the other circumstances. When a mother cannot give her infant at least two satisfactory breast feedings daily, it is advisable to wean the child.

Sometimes a baby cannot take cow's milk; in such a case milk from a goat may be tried. This has been of great value in some cases of exudative diathesis.

As a rule, the trouble in weaning is not because the infant cannot digest cow's milk, but because the change is made too suddenly or the food given at first is not properly adapted to the infant.

In cases of sudden weaning, the food must be weaker in the beginning than for an artificially fed child of the same age. If weaned at 6 months, the infant should be put on a mixture for a child of 2 or 3 months, and the same rule applies for older infants. When the infant becomes accustomed to cow's milk, the strength can be gradually increased.

By gradually changing this way from breast feeding to bottle feeding, weaning can usually be completed in two weeks without upsetting the baby. It is very seldom necessary to wean in a shorter time than this and there is every reason to wean gradually so as to prevent any disturbance. Rarely should breast feeding be continued past the first year.

The fear of the laity of the "second summer" is well founded when dirty milk and other improper foods are fed promiscuously; but with clean, certified and sterilized milk and properly prepared soft foods the dangers of the summer heat are minimized. It should be the rule to underfeed rather than overfeed in hot weather; during the extreme hot spells the diet may well be reduced by one third or even one half.

7. One kilogram equals 2⅕ pounds; 30 c.c. (or 30 gm.) equals 1 ounce.

THE PHYSICIAN

It is necessary that the medical adviser, in order that maximum breast feeding may be maintained, shall impress on his patient that the instances in which the mother's milk will not agree with her own baby are very rare; that the first few days and weeks form the most critical period in the nursing history, during which the mother and the infant are adapting themselves to each other. During this period there is great danger that the distress and lack of gain in weight due to underfeeding may be misinterpreted as improper feeding. The scale used for measuring the twenty-four hour intake, by weighing before and after each feeding and the estimation of the gain in weight over given periods of time, must be the determining factors for the institution of complemental feeding. In order to establish a maximum milk flow, both breasts should be given at each feeding, but at not too short intervals, and if other food is necessary it should be given after the nursing and not in place of a nursing. Such a procedure will result in a maximum stimulation. When, through any cause, the infant is unable properly to stimulate the breasts, regular expression should be practiced. Mothers are to be taught that lactation can be reestablished even after the baby has been off the breast for some time.

In private practice, in order to obtain the maximum breast feeding, it is necessary that routine consultations with the mother be inaugurated. These should begin shortly after the baby is born, by personal instruction to the mother as to the best means of promoting her breast milk supply through proper hygiene and diet, on her own part, and regular stimulation of her breasts by the baby or by expression of milk or a combination of these methods. When the activities of the physician do not permit such instruction it should be given by a trained nurse or some one who has had practical experience along these lines.

In not a few instances, even in the presence of good breasts, during the first few weeks the breast milk supplied by the mother will not meet all the requirements of the infant, and occasionally this period of insufficient supply may run into the second month. In all such cases complemental[8] feeding becomes necessary. With improvement in the mother's general health and her assumption of her normal activities, the breast milk supply increases, and repeatedly we have seen what at first seemed a hopeless case for complete breast feeding develop into one in which the infant could be supplied with all of its needs until the time arrived at which mixed feeding was the diet of choice. Such cases are especially common among the very young and old primiparas, and these are the ones who require the greatest amount of encouragement.

It therefore becomes the duty of the physician, in order that the mother may assume her full responsibilities toward her infant, to see the infants in their practice at regular intervals during the period of lactation. Weekly or bimonthly consultations during the first month, and monthly visits during the remainder of the nursing period are not only to be recommended but in many instances are imperative for the best interests of the infant. Breast feeding is rarely considered a burden by the young mother when the four-hour nursing period has been established, and in case of emergency it is usually possible to express suffi-

8. Complemental feeding is the administration of a bottle following a period at the breast; substitute feeding the replacing of a breast by a bottle feeding.

cient milk to satisfy infants, should it become impossible for the mother to be present at the feeding hour.

DISTURBANCES IN BREAST-FED INFANTS

Breast milk is a complete food and contains all the essentials of a well-balanced diet for the human infant. Notwithstanding the fact that there is a considerable difference in the chemical composition of milks from different sources, the average infant will thrive on them. However, nutritional disturbances are of common occurrence in the breast fed; and while, on the whole, they are less dangerous than similar disturbances in bottle-fed infants, they should receive early and serious consideration.

Those most commonly seen fall within one or more of the following groups: (1) underfeeding; (2) overfeeding; (3) congenital debility, with resulting impairment of the vital functions; (4) intercurrent parenteral (pharyngitis, tonsillitis, bronchitis, pneumonia, pyelitis, etc.), and enteral infections, and (5) idiosyncrasy toward mother's milk.

UNDERFEEDING

The diagnosis will be dependent on an estimation of the quality and the quantity of milk received by the infant. The clinical picture as presented by the infant is the predominating factor that leads the physician to an investigation of the underlying elements causing its lack of progress.

The quantity of the twenty-four hour supply is ascertained by weighing the infant before and after each nursing without change of garments. An accurate beam scale should be used. Most infants require from 2 to 2½ ounces (60 to 75 c.c.) of breast milk per pound of body weight in twenty-four hours.

SYMPTOMS

Dissatisfaction on the part of the infant with its individual meals is usually the first evidence of underfeeding. This is usually followed by restlessness and crying before the nursing time is due. Again, it may manifest its dissatisfaction by nursing greedily for a short time, releasing the breast and crying. In some instances it cannot be induced to remain at the breast because of the difficulty it encounters in obtaining its food after the first few minutes; or, on the other hand, there may be a tendency to prolong its feeding time. These symptoms are usually soon followed by a period of stationary weight or a loss in weight.

Usually the stools are normal in appearance, but small in amount, and give little evidence of the cause of the trouble. However, if the food supply is decidedly insufficient, we may have a positive evidence of the underfeeding by the appearance of the so-called "hunger stools," which are brownish or greenish brown and contain little fecal matter and much mucus.

If the condition is not corrected, the baby becomes weak and apathetic. The skin loses its turgor, its temperature becomes subnormal, it is pale and anemic and the fontanels become depressed and the abdomen sunken. Whenever there is room for doubt as to the cause of this group of symptoms, the scale will furnish the most positive evidence.

TREATMENT

The first step necessary in the institution of a rational regimen is to ascertain whether the fault is to be found in the mother or in the infant. On the part of the mother, it may be due to her physical condition or lack of glandular tissue in the breasts. Or, again, the infant may have some deformity or infection of the mouth interfering with nursing, or it may be too weak to continue its nursing to the end. If the infant is not getting enough food, artificial food must be supplied, temporarily, as part of the diet.

Undue haste in removing the baby from the breast offers the greatest danger in the treatment of underfeeding and should be resorted to only when other means fail. The ability to increase the quantity of milk secreted by the average woman must necessarily vary directly with the quantity and quality of the glandular tissue composing the breast. However, to a certain extent at least, certain factors will more or less directly influence the quantity and quality of the secretion and they are worthy of our attention.

If the trouble is due to an actual insufficiency in the milk supply, careful attention must be paid to the hygiene of the mother. She must have plenty of rest and sleep, her surroundings must predispose to a happy frame of mind, she must not be overburdened with household cares and her exercise must be regular. If possible, she should be freed from all care of the baby at night. She should eat sufficient food and drink plenty of liquids. Every effort should be made to stimulate her appetite, so that she will take an abundance of milk and other nutritious foods; but she should not be forced beyond her natural appetite, even in the taking of fluids. The general rules previously mentioned for the mother's diet should be followed. An excessive diet may be assimilated by the mother's body without increasing the flow of milk.

The diet recommended should be palatable to the nursing mother, as previously recommended.

Stimulating massage, combined with expression, may be applied to the breast in such a manner as to stimulate the whole gland. This can best be accomplished by two movements: By gently raising the whole breast from the chest wall and kneading it gently between the fingers, and by holding the breast against one hand and making circular movements against the periphery with the outspread finger-tips of the other hand and gradually working from its base toward the nipple.

Baths at a temperature comfortably cool (from 80 to 90 F.) should be taken daily to promote the mother's general health as well as cleanliness. These should be followed by a brisk rubbing with a coarse towel.

Steaming the breast by the application of hot towels covered with oil silk two or three times daily is of decided benefit.

Galactagogues are of questionable value. General tonics will often improve the digestion and tend to overcome anemia, and in this way improve the general health and thereby lactation. If after such methods the mother's milk is still insufficient, mixed feeding—part breast feeding and part bottle feeding—may be given for weeks or even months. One bottle feeding a day should be given in place of the breast, and the bottle should be given after each of the other breast feedings to make up the necessary amount. The baby should be encouraged to empty the breasts.

When part breast milk and part cow's milk is given, a well baby will usually have no difficulty in digesting the cow's milk. In case the baby is disturbed or sick, the bottle can be stopped for a few days and the diet limited to breast milk and boiled water. Carbohydrates can usually be added to the water to advantage, in the form of cereals and sugars.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 20, 1923

PROGRESS OF CLINICAL CALORIMETRY IN THE UNITED STATES

The ready determination of the fundamental metabolic reactions in the body for the purpose of discovering pathologic conditions because of which the exchange of matter and the transformation of energy may be noticeably altered has been the goal of many investigators. Thanks to the development of clinical calorimetry, to which American investigators have contributed no small share, the estimation of the so-called basal metabolic rate has become a procedure adapted to accurate application in any well organized hospital or clinical laboratory. Only a few years ago, apparatus for this purpose was unheard of except in a few specially equipped laboratories for physiologic research in nutrition. Today, outfits for the study of metabolism at the bedside exceed the number of persons properly trained to apply the apparatus to its appropriate uses. The magnitude of the development and legitimate exploitation of these newer diagnostic resources of the medical sciences can best be appreciated from the report that a single clinic of repute is already in a position to report more than 25,000 measurements of basal metabolic rates on nearly 9,000 persons in the last five years,[1] while another hospital has already recorded metabolism studies in a series of 1,000 cases.[2]

The statistics thus rapidly accumulating are enabling those interested in the problems of metabolism to secure at least tentative answers to some of the questions still puzzling them. With respect to the technic of the measurements themselves, the need of insisting on suitable conditions for the analysis is well understood by those initiated into the fraternity of metabolism analysts. As an expert has recently remarked in discussing the temporary elevations of the metabolic rate so often encountered, nothing the subject does or fails to do, except deep sleep, can depress the metabolic rate, whereas any slight disturbing condition, such as a headache, pain, discomfort, excitement, restless or uneasy sleep the preceding night, fear, movements, fever, surreptitious ingestion of food, or innumerable other factors may, in certain cases, cause an appreciable elevation. Technical errors, we are told further, are a much less common source of inaccuracy than failure to obtain the metabolic rate under absolute basal conditions. A basal determination is not obtained if the subjects fail to cooperate, or are nervous and worried over the procedure, as they are likely to be in the first test. Under such conditions the observed metabolic rate may be from 5 to 30 per cent. too high. Therefore, a first test with an observed metabolic rate between + 10 and + 20 per cent. will probably be lowered to within the normal limits of variation if the test is repeated a sufficient number of times to obtain a true basal metabolic rate.

What shall be the standard for comparison? Although food and activity are intentionally excluded from modifying the metabolism, account must be taken of age, sex and size. In examining the question of how the active protoplasmic mass, i. e., the metabolizing tissue, of the body can best be estimated, Boothby and Sandiford[3] have found that there is a remarkable agreement between the surface area calculated by the Du Bois surface area formulas and the formulas derived from Harris and Benedict's biometric correlation formulas for the prediction of the basal heat production. Hence the Du Bois formula for the determination of the surface area and the Du Bois normal standards of heat production for each square meter of body surface for age and sex are considered by them the best method at present available for predicting the normal heat production.

A tremendous interest attaches to the demonstration from the Mayo Clinic[1] that a high percentage of persons have normal metabolic rates according to the Du Bois standards, unless they are suffering from some specific disease characterized by an alteration in the basal metabolism. Boothby and Sandiford allege that the basal metabolic rate differentiates diseases into those with increased, normal and decreased metabolism as sharply as the temperature divides diseases into the febrile and afebrile groups. Out of several thousands examined, more than three quarters of all patients other than those with disorders of the thyroid had basal metabolic rates within the restricted Du Bois normal limits of + 10 to — 10 per cent.; 90 per cent. had basal metabolic rates within + 15 to — 15 per cent. The high percentage of normal results is most significant when it is considered that nearly all of the subjects who comprised the normal group had a functional or organic disease. With the exception of the thyroid and suprarenal glands, there is at present no evidence that any ductless gland is responsible for a demonstrable

1. Boothby, W. M., and Sandiford, Irene: Summary of the Basal Metabolism Data on 8,614 Subjects, with Especial Reference to the Normal Standards for the Estimation of the Basal Metabolic Rate, J. Biol. Chem. **54**: 783 (Dec.) 1922.

2. Means, J. H., and Burgess, H. W.: Basal Metabolism in Nontoxic Goiter and in Borderline Thyroid Cases, Arch. Int. Med. **30**: 507 (Oct.) 1922.

3. Boothby, W. M., and Sandiford, Irene: A Comparison of the Du Bois and the Harris and Benedict Normal Standards for the Estimation of the Basal Metabolic Rate, J. Biol. Chem. **54**: 767 (Dec.) 1922.

calorigenic reaction. A scientific basis for clinical calorimetry being thus firmly established, it becomes increasingly important that the training and educational equipment of those who are to profit by it shall be so adequate that the progress of medicine will be properly safeguarded, and above all that quackery shall not be enabled to gain a foothold where ignorance and incompetence leave an unprotected pathway.

DRUG EXANTHEMS

With the notable increase in the number of new drugs, many of them representing synthetic chemical compounds developed in the laboratories of various countries, have come manifestations of unusual or unexpected reactions produced by them in exceptional cases in the human organism. Thus, in addition to the long recognized exanthems known to occur at times after the use of bromids and iodids and such familiar medicaments as arsenical compounds, a diversity of skin eruptions, many of them transitory in character, has been described in recent years. The offending substances include such popular drugs as the derivatives of barbituric acid, several of which are widely used as soporifics, and various antipyretics, including some of the most familiar ones, hexamethylenamin and phenolphthalein. The skin manifestations occasionally called forth by the latter popular laxative have had repeated mention in THE JOURNAL.[1]

The theories of the etiology of the cutaneous manifestations have been as varied as the latter themselves appear to be. The hypotheses have followed the views that have happened to prevail at successive periods; accordingly, one reads of idiosyncrasy, susceptibility, chemotaxis, toxicity and, more recently, of allergy, or anaphylaxis, in connection with the phenomena. Some of the theories are susceptible of more rigorous experimental test. Reasoning that if a suitable explanation should be found for the more frequent of the exanthems, such as iododermas and bromodermas in their various forms, the answer might suffice also for the skin lesions or rashes produced by many other drugs. Wile, Wright and Smith [2] of the University of Michigan have reconsidered some of the factors in connection with the effects of bromids and iodids. The theory of the existence of specific precipitins for these substances in the blood was promptly disposed of, as this type of "immune" substance was not demonstrable. Percutaneous sensitization tests for iodid and bromid are uniformly negative, and cannot, therefore, be used to indicate ingestion susceptibility.

Wells [3] pointed out, not long ago, that there still remains no satisfactory proof that anything except proteins can act as anaphylactogens. He scouts the idea that drugs can produce true anaphylaxis. It is probable, Wells asserts, that many of the systemic reactions observed after intravenous injections of arsenicals and other substances are not anaphylactic but anaphylactoid, and dependent on capillary thrombosis, agglutination, emboli or capillary toxicity, after the order of the results obtained by Karsner and Hanzlik. According to Wells, the failure to produce passive anaphylaxis with the serum of persons hypersensitive to drugs, the failure to secure convincing active sensitization in guinea-pigs, the number of instances in which drug hypersensitiveness is exhibited on the first injection and those in which heredity is evidently responsible, and numerous points of difference from true anaphylactic reactions, all make the identity of drug hypersensitivity with true antigen-antibody anaphylaxis a matter of great improbability. With this the studies of Wile, Wright and Smith are in harmony. The local phenomena of iododerma and bromoderma, they state, do not find their explanation on simple bacterial or simple chemical grounds. The ultimate explanation probably lies in a complex biochemical reaction. The classification of such cutaneous phenomena, however, as true sensitization or allergy, they conclude, is as yet unjustifiable in the light of present knowledge.

THE DISTRIBUTION OF BACILLUS BOTULINUS

Botulism stands almost alone among human diseases in that the microbic cause is not a tissue invader transmitted directly through the agency of man or the higher animals or by means of insects, but is primarily a saprophyte, owing its pathogenic power to a toxin produced in food substances outside of the animal body. From the standpoint of prevention, therefore, the real habitat and distribution of *Bacillus botulinus* become matters of fundamental significance. Certain forms of animal and plant life dangerous to man have a definite localization on the earth's surface. Poisonous snakes, the mosquito carrier of yellow fever virus, and poison ivy are all restricted to certain areas; is this true of *B. botulinus?*

The obscurity that still surrounds the natural living conditions of most of the spore-forming anaerobes has been especially marked in the case of *B. botulinus*. With the exception of an isolated finding in 1897 by Kempner and Pollack, who came across this organism in the intestinal contents of a hog, it had been found until recently almost solely in connection with outbreaks of human botulism. Some early observations on the Pacific Coast by Meyer and Geiger [4] seemed to indicate

1. Wise, Fred, and Abramowitz, E. W.: Phenolphthalein Eruptions, Arch. Dermat. & Syph. **5**: 297 (March) 1922. Ayres, Samuel: Phenolphthalein Dermatitis, J. A. M. A. **77**: 1722 (Nov. 26) 1921. Corson, E. F., and Sidlick, D. M.: Urticaria from Habitual Use of Phenolphthalein, ibid. **78**: 882 (March 25) 1922. Rosenbloom, Jacob: Report of a Case of Nasal Herpes Due to Ingestion of Phenolphthalein, ibid. **78**: 967 (April 1) 1922. Wise, Fred, and Parkhurst, H. J.: Drug Eruptions from the Clinical Aspect, Arch. Dermat. & Syph. **6**: 542 (Nov.) 1922.

2. Wile, U. J.; Wright, C. S., and Smith, N. R.: A Preliminary Study of the Experimental Aspects of Iodid and Bromid Exanthems, Arch. Dermat. & Syph. **6**: 529 (Nov.) 1922.

3. Wells, H. G.: The Present Status of the Problems of Anaphylaxis, Physiol. Rev. **1**: 44 (Jan.) 1921.

4. Meyer, K. F., and Geiger, J. C.: Pub. Health Rep. **36**: 1313 (June 10) 1921.

that manured soil was very likely to contain *B. botulinus* spores. One of their observations is very striking: "For eight years previous to 1918, an owner of a small vegetable garden grew and home canned string beans without any spoilage. In 1918, the garden was fertilized with animal manure. The beans grown during this year were canned by the same method used previously, the contents of the jar promptly spoiled and some contained botulinus poison." From this, it would seem that the home of *B. botulinus* is in the alimentary tract of certain domestic animals.

This view has been considerably modified by a very extensive study of the distribution of the spores of *B. botulinus* carried out by Meyer and his associates, the results of which have just been published.[5] From this, it appears that the spores of *B. botulinus* are widely distributed in soil throughout the United States and part of Canada. They have also been obtained from soil samples collected in Belgium, Denmark, England, the Netherlands and Switzerland, and from Hawaiian and Chinese soils. In the United States, they have been found in almost every state in the Union. It is a surprising and possibly significant fact that *B. botulinus* spores were found far more frequently in virgin soil from mountainous districts than in soil or manure collected from animal corrals, pig pens, and the like. Contrary to earlier assumptions, soils subjected to intensive fertilization yielded *B. botulinus* less commonly than did uncultivated soils.

Of the two types of *B. botulinus,* the more toxic, commonly known as Type A, was found mainly in the Pacific Coast and Rocky Mountain states, while Type B predominated in specimens from the Mississippi Valley and Great Lakes region. Scattered findings of Type A were reported from some of the Atlantic Coast states, but for the most part B was the prevailing type. The soil samples from European countries did not show A in a single instance.

The findings of Meyer and his collaborators with regard to the presence of *B. botulinus* in various vegetables and fruits are equally interesting. In view of the soil findings mentioned above, all garden and field products in certain localities might be expected to carry *B. botulinus* spores at times. This is apparently true in general, but the authors call attention to some common variations in the results reported. Pea pods, stalks and leaves gave 5.4 per cent. of positive cultures (fifty-one specimens), while the vines and pods of string beans (forty-four specimens) were 32.7 per cent. positive. The number of specimens of any particular vegetable examined is hardly large enough to warrant special comment, and it is evident that the occurrence in vegetables should be closely correlated with local soil findings. Ten specimens of spinach were examined and all were negative, although this vegetable has been involved in several outbreaks of botulism.

5. A series of seven papers in the Journal of Infectious Diseases **31**: 501-613 (Dec.) 1922.

The failure of these recent observers to find *B. botulinus* in significant numbers in animal excreta is worthy of particular notice. They are now inclined to believe that manures or fertilizers contribute relatively little to the contamination of the soil with this bacillus. Their observations on man also were negative. Contrary to the findings of Tanner and Dack,[6] who found *B. botulinus* in two out of ten specimens of feces from healthy persons, Meyer and Dubowsky did not obtain a single positive result from the examination of stools of forty-five normal persons.

It is evident that much still remains to be learned about the distribution of *B. botulinus* in nature. As always happens in scientific progress, these extensive and important observations, while they clear up much that was formerly obscure, suggest also numerous problems that remain for solution.

BACILLUS ACIDOPHILUS AND INTESTINAL PUTREFACTION

The accumulating experience in the use of milks soured by the action of lactic acid-producing organisms illustrates the unwisdom of accepting indirect inference in place of convincing observation and experiment in the applications of science to practice. At the outset it may be frankly admitted that the administration of sour milk products is at times beneficial. This is particularly true in pediatrics.[7] If clinical observation justifies the belief that for certain types of gastrointestinal disturbances fermented milk accomplishes more than sweet milk with a similar fat, sugar and protein content, the precise convincing explanation for the specific benefits is by no means yet forthcoming. One by one the hypotheses are being shattered. The early assumption that the Bulgarian bacillus of Metchnikoff fame could be successfully implanted in man and the intestinal flora permanently modified thereby seems to have become untenable. Of late, attention has been directed to the effects of the administration of milk cultures of a related micro-organism, *Bacillus acidophilus,* stated to be a normal inhabitant of the human alimentary tract, but ordinarily present in very small numbers under the most common dietary regimens.[8] This bacillus is reported to be more successfully implanted, provided a suitable pabulum is provided for it in the intestinal tract. Only under such conditions can the flora be transformed into the acidophilic type.

Because the acidophilic bacteria can be made to predominate so largely in the intestine under appropriate modes of administration, if not actual implantation in a more permanent way, it has been assumed that the activities of putrefactive organisms would be almost

6. Tanner, F. W., and Dack, G. M.: Clostridium Botulinum: Presence in Human Alimentary Tract, J. A. M. A. **79**: 132 (July 8) 1922.

7. Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, Chicago, American Medical Association, 1922, p. 156.

8. Rettger, L. F., and Chaplin, H. A.: The Intestinal Flora, Yale University Press, 1921.

entirely suppressed by a favorable change of flora induced by milk containing cultures of *Bacillus acidophilus*. With the disappearance of putrefaction, the somewhat hypothetic toxic products charged with harm to the body might also reasonably be expected to be lacking. Consequently, and not without some logic, suitably treated milk has been recommended in the treatment of intestinal disturbances due to putrefactive changes. However, if indican excretion may be taken as an index of intestinal putrefaction, it now appears that implantation of *Bacillus acidophilus* in the intestine does not necessarily lower the putrefactive processes. This, at least, is the conclusion that may be derived from two recent independent investigations, by Smith and Kulp [9] at Yale University, and by Kast, Short and Croll [10] at the New York Post-Graduate Medical School and Hospital. Some of the human subjects showed increased indican and phenol excretion in the urine when liberal amounts of milk and lactose cultures of *B. acidophilus* were added to the diet, although the concentration of the micro-organisms in the feces proved to be very high. In other cases, despite excellent implantation and determined change of intestinal flora to the aciduric type, the output of indican did not usually fall below that of the control periods.

It may be that the large amount of tryptophan-yielding protein present in milk and serving as a possible indican precursor may explain the outcome. These important and timely facts should not be interpreted as an arraignment of *Bacillus acidophilus* therapy. They merely suggest that favorable clinical results obtained with milk and lactose cultures of *Bacillus acidophilus* are not primarily dependent on decreased production of the antecedents of indican.

9. Smith, A. H., and Kulp, W. L.: The Effect of Change in Type of Intestinal Bacteria on Urinary Indican and Phenols, Proc. Soc. Exper. Biol. & Med. **20:** 44 (Oct.) 1922.
10. Kast, L.; Short, J. J., and Croll, H. M.: The Influence of Diet and of B. Acidophilus Ingestion on Intestinal Putrefaction, Proc. Soc. Exper. Biol. & Med. **20:** 45 (Oct.) 1922.

Current Comment

FUNCTIONAL TESTS FOR THE LIVER

Although so-called "functional tests" for the kidney have proved to be of considerable value in the clinical study of renal disorders, the attempts to devise equally useful or dependable tests for hepatic function have not been so successful. This is not due to failure to devote attention to the subject, or to lack of persistent effort to devise satisfactory reactions. A variety of tests have been proposed, often with considerable enthusiasm on the part of their authors; in most cases, however, a sufficient trial has demonstrated that they fall short of the expectations that were raised for the procedure. The explanation of the inadequacy has usually resided in the fact that comparatively few of the tests proposed involved functions that are absolutely specific for the liver, or that a number of simultaneous conflicting factors made interpretations very uncertain. The importance of the subject should nevertheless encourage rather than discourage further effort toward the discovery of an adequate test. Several years ago, Abel and Rowntree [1] of the Johns Hopkins Medical School discovered in phenoltetrachlorphthalein a pigmentary substance which, under normal conditions, is excreted entirely by the liver. Thus the dye leaves the blood stream rapidly and is carried into the alimentary tract contents with the bile. According to experimental investigations by Rosenthal, the elimination of definite doses of phenoltetrachlorphthalein proceeds with remarkable uniformity except in cases of liver damage. His recent researches with a simplified technic [2] on human patients give promise that a method available for clinical use has at last been perfected whereby an index of the functional capacity of the liver or of the total amount of functioning liver tissue can be secured without difficulty. Clinical results have fully borne out experimental work. Following the intravenous injection of the dye, strikingly high degrees of retention in the plasma have occurred in cases of hepatic disease. The most noteworthy retentions among the patients studied in Boston by Rosenthal have been present in acute hepatitis, in a case of cirrhosis in which there was a small liver, and in advanced cases of hepatic carcinoma. Such reports should encourage a thorough trial of the new procedure.

1. Abel, J. J., and Rowntree, L. G.: J. Pharmacol. & Exper. Therap. **1:** 231, 1909.
2. Rosenthal, S. M.: A New Method of Testing Liver Function with Phenoltetrachlorphthalein, J. A. M. A. **79:** 2151 (Dec. 23) 1922.

THE COST OF WORK—IN CALORIES

Now and then it falls to the professional duty of the physician either to prescribe some form of work for his patients or to consider the possible suitability of the tasks in which they are customarily engaged. Thus, there is added to the many requirements for acceptable medical practice the duty of becoming an expert on the subject of both muscular and mental effort. Exercise must be prescribed for some persons; others must be prevented from engaging in overstrenuous occupation. Personal experience becomes a helpful teacher in enabling us to pass judgment on various degrees or types of exercise; and now science is coming to our further assistance. The study of energetics bears out experience in telling us that lumbering is a calory-consuming occupation in which the daily need of food fuel may rise to 6,000 calories. Hence, Lusk [3] is moved to remark that the proverbial reputation of sawing wood as a strenuous occupation has here its scientific verification, and explains the disinclination of the hungry to engage in this useful occupation, as well as the unpopularity of charitable wood yards. The wood yard and the stone pile are more likely to be involved in a sentence to jail than in a physician's directions. The easier tasks that permit suitable function without overtaxing an impaired heart or some other organ are usually expressed in medical literature in terms of dumb-bells or Indian clubs or stairclimbing. Most considerations of this sort have involved the male sex and

3. Lusk, Graham: The Science of Nutrition, Ed. 3, Philadelphia, W. B. Saunders Company, 1917, p. 349.

its vocations. Of late, new data have accumulated with respect to the energy expenditure of women in household occupations. The figures for rest approximate 60 calories or, in round numbers, a calory per kilogram, hourly. Such work as sewing requires the additional expenditure of from 10 to 15 per cent. of energy; for dishwashing or ironing the increment mounts to 20 per cent. or more, while the rapidly vanishing vocation of sweeping may make an extra energy demand of 65 per cent. an hour. According to the information issued from the Office of Home Economics [4] at Washington, it appears that knitting, crocheting, darning and sewing by hand make moderate demands on the body as regards energy expended, compared with washing, ironing, sweeping and dishwashing. This does not take into account such matters as fatigue from sitting in one position, from monotony of work, or similar factors, but simply the energy expenditure for the work done. Here is a liberal range of choice of therapeutic tasks for women. And lest the list should seem to be too conservative, let us add that the work of typewriting, according to Carpenter,[5] belongs in the dishwashing group of muscular exertions.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Dr. Grote Resigns.—Dr. Carl A. Grote has resigned as city and county health officer for Huntsville and Madison County to accept a similar position in Greensboro, N. C. Dr. Grote has been in charge of the health department at Huntsville for five years and was president of the Junior Chamber of Commerce and the Kiwanis Club. He succeeds Dr. Harry Brockman. Dr. Burton F. Austin, Decatur, county health officer of Morgan County, will succeed Dr. Grote as health officer of Madison County.

CALIFORNIA

Personal.—Dr. Lester E. Tretheway, Manteca, has been appointed a member of the county board of health.——Dr. David Starr Jordan, Stanford University, Palo Alto, Calif., has been awarded the Order of the Rising Sun by the Japanese government in recognition of his services to that country. President Kozai and Professor Watase of the Imperial University of Tokyo presented the decoration.

State Board of Health.—Governor Stephens has reappointed the following physicians, whose terms expired some time ago, as members of the state board of health: Drs. Edward F. Glaser, San Francisco; George E. Ebright, San Francisco; Robert A. Peers, Colfax; Adelaide Brown, San Francisco, and Frederick F. Gundrum, Sacramento. These officers will serve for four years.

CONNECTICUT

Personal.—Dr. Albert E. Austin, Greenwich, sailed, December 16, on the White Star liner *Majestic* for Cherbourg and Southampton.——Dr. Gilbert T. Smith, Stamford, has been appointed chief surgeon of the S. S. *Resolute*, which left New York, January 8, for a tour round the world.

4. Langworthy, C. F.: Report of Work on Energy Expenditure for Sewing and Some other Household Tasks, J. Home Economics **14**: 621 (Dec.) 1922.

5. Carpenter, T. M.: The Increase in Metabolism Due to the Work of Typewriting, J. Biol. Chem. **9**: 231, 1911.

FLORIDA

Duval County Medical Society.—At the annual meeting of the society in Jacksonville, December 5, Dr. John E. Boyd was elected president; Dr. Elmo D. French, vice president, and Dr. Francis A. Copp, secretary. Dr. John K. Norwood was reelected treasurer and business manager of the *Duval County Medical Society Bulletin.*

Antimosquito Association Organized.—At the recent antimosquito conference, held in Daytona, the Florida Antimosquito Association was organized, with Col. Joseph Y. Porter, Sr., Key West, as chairman. This independent agency, with a membership of civic organizations, corporations and individuals interested in mosquito control work, will be closely identified with the state board of health, which will make community surveys, outline plans, initiate campaigns and guide its movements.

GEORGIA

Public Health News.—The portable dental clinic of the Atlanta public schools reported 11,669 children with defective teeth among pupils of nine public schools examined recently. The 240 members of the Atlanta Dental Society are cooperating in a drive for better teeth among schoolchildren, each dentist treating, free of charge, at least one child. Of 6,279 children examined during one week, 5,534 were found to be in need of treatment.

Crawford Long Memorial Association.—The Atlanta Academy of Medicine has furnished an office free of cost for the Crawford W. Long Memorial Association to conduct its campaign for funds to erect a statue of Dr. Long in the National Hall of Fame, Washington, D. C. Souvenir checks have been sent out by Dr. Frank K. Boland, president of the association, to be filled in by the subscriber with the amount he wishes to give. On one end of the check is a picture of a medallion of Dr. Long as a young physician, administering ether for the first surgical operation under anesthesia, March, 1842. Druggists will also be recipients of the requests for donations. Dr. William J. Blalock, president of the Fulton National Bank of Atlanta, is treasurer of the association. The sum of $10,000 is required, of which only $3,000 has been subscribed to date.

ILLINOIS

Personal.—Dr. Arthur N. McCord, city physician of Streator, sustained a fracture of the right wrist, December 15, while cranking his car.——A public reception and banquet was given in honor of Dr. Clarence E. Smart of Weldon on the occasion of his leaving for Savannah, where he will reside in future.——Dr. Herbert E. Parson, Decatur, has been reelected county physician.——Dr. Ward P. Burdick was unanimously elected president of the staff of St. Anthony Hospital, Rockford, at the annual meeting.——Dr. Walter C. Martini has resigned as medical superintendent of the Oaklawn Sanatorium, Jacksonville, and will act in the same capacity at the Champaign County Tuberculosis Hospital at Urbana, succeeding Dr. Anna C. Johnson, who resigned recently.

Chicago

Society of Medical History Meeting.—At the meeting of the Society of Medical History, Chicago, January 12, papers were presented by Dr. Peter Bassoe on "Early History of Neurology and Psychiatry in the Middle West," and by Dr. A. S. Warthin, Ann Arbor, Mich., on "Noah Webster as an Epidemiologist."

Personal.—Dr. Robert C. Timms has resigned from the city health department, following five years' service.——Drs. Franklin H. Martin, Emil G. Beck, Arthur D. Black, Truman W. Brophy, Frank E. David, Ernest J. Ford, Junius C. Hoag, Effie L. Lobdell, Albert J. Ochsner and Henry Schmitz will leave, February 10, for an extended tour of South America.——Dr. Benjamin B. Beeson, Chicago, read a paper on "The Diagnosis of Skin Diseases" before the Scott County Medical Society at Davenport, Iowa, January 2.

Infant Welfare Society.—The annual meeting of the society will be held, January 24. At a meeting held recently, it was stated that approximately 12,000 babies were taken care of by the twenty-seven stations during 1922. This work will be extended to every corner of the city, with the hope of saving the lives of 18,750 babies in Chicago during 1923, it was announced. While the death rate among infants for the city was 89 per thousand, the rate among welfare babies was only 14.——Vital statistics recently announced give Chicago's

birth rate as 20.02, as compared with 20.33 in 1921, and the death rate, 11.88, as compared with 11.08 in 1921. Thus the city's population is increasing at the rate of 25,000 a year from the excess of births over deaths alone.

INDIANA

Memorial to Physicians.—Bronze memorial tablets to the late Drs. Albert C. Kimberlin and Frank B. Wynn were unveiled with appropriate ceremonies at the Methodist Episcopal Hospital, Indianapolis, January 14.

Indianapolis Medical Society.—At the annual meeting of the society, December 30, the following officers were elected for 1923: president, Dr. John W. Sluss; vice presidents, Drs. William F. Molt, and Arthur L. Walters, and secretary-treasurer, Dr. William A. Doeppers. Dr. Charles H. Good, president of the Indiana State Medical Association, gave an address.

KENTUCKY

Personal.—Dr. Henry E. Tuley, who has resigned as superintendent of the Louisville City Hospital on account of ill health, has been succeeded by Henry Reager.——Dr. James U. Ridley, Robard, has been elected health officer of Henderson County to succeed Dr. Everett N. Powell of Corydon.

Public Health News.—The advisory committee of the state board of charities and corrections, December 30, appointed fifteen Lexington physicians as a local consulting staff of the state board to work with the resident staff of the Eastern Kentucky State Hospital and the State School of Reform at Greendale, in providing proper medical care to the inmates of the two institutions. This is the first move in a campaign to improve the conditions from a medical standpoint at the charitable and penal institutions of the state. The Feebleminded Institute and the State Reformatory, Frankfort; the State Hospital, Lakeland; the State Hospital, Hopkinsville, and the state penitentiary, Eddyville, are the other institutions that will receive gratuitous service by local physicians. ——Five sanitary inspectors from the School of Public Health, operated by the University of Louisville, have been added to the public health workers of the state. These men, who will be sent to different counties of the state, in addition to having pursued technical and theoretical studies in public health during the summer, were given practical work under the supervision of the health officer in one of the full-time health departments.——An order has been issued by the health officer of Catlettsburg, for general vaccination following the discovery of four cases of smallpox in the city. The victims had been at large on the streets for several days before their cases were diagnosed. A rigid quarantine has been established over the locality.

LOUISIANA

Hospital News.—A ward in the proposed new annex building of the Touro Infirmary, New Orleans, will be named in memory of the late Samuel Schwartz, whose heirs have increased the building fund of the infirmary by $15,000, it was announced, January 3, by the board of managers. The ward will be known as the Sam Schwartz Ward. Owing to the number of premature babies born at the infirmary, the baby incubator, installed through the generosity of Mr. Bonart, has proved inadequate, and Mr. Bonart has donated another. Dr. J. W. Newman, New Orleans, recently donated $5,000 to the institution, for maternity work.——The Greenwell Springs Tuberculosis Sanatorium, near Baton Rouge, was totally destroyed by fire, recently. The loss is estimated at $50,000.

MASSACHUSETTS

Physician Elected Mayor.—Dr. William D. McFee was elected mayor of Haverhill, December 5, by a majority of 2,341. Dr. McFee is chief of staff of the Gale Hospital and was formerly city physician.

Hospital News.—Repairs costing $60,000 will be made at the Peter Bent Brigham Hospital, Boston, recently vacated by the U. S. Veterans' Bureau, it is announced by Dr. J. B. Howland, superintendent.——The new home for the Boston Lying-In Hospital, with the new nurses' home, opposite the Harvard Medical School at Cambridge, was formally opened, January 1, when the patients were admitted. Nearly $1,000,000 has been raised to defray expenses of constructing the new hospital and nurses' home. The wing in which private wards will be established will be erected later. Dr. William L. Richardson, through whose efforts the hospital was reopened, is president emeritus of the trustees.

Personal.—On the retirement of Dr. George W. Dow, Lawrence, as medical examiner, Dr. Victor A. Reed, his assistant, will succeed him. Dr. George B. Sargent, Lawrence, will succeed Dr. Reed as assistant medical examiner.——Dr. John M. Little of Boston will succeed Dr. Edwin W. Dwight, Boston, as chief surgeon of the Boston and Albany Railroad. Dr. Dwight, whose resignation became effective, January 1, has been chief surgeon of the road since 1909.——Prof. E. L. Mark, who was 75 in May, and retired recently with the title of Hersey professor of anatomy, emeritus, Harvard University, was given a dinner in Boston, December 27.——Dr. Howard T. Child, Boston, has been assigned as permanent subdistrict medical officer of the local office of the U. S. Veterans' Bureau, Burlington, Vt. Dr. Child served with the U. S. Navy during the World War.—— Dr. Peter L. McKallegat has resigned as city physician of Lawrence.——Dr. Joseph A. Bacon has been reappointed head of the Haverhill Tuberculosis Sanatorium.

MISSOURI

Personal.—Dr. George M. Boteler, city health officer of St. Joseph, resigned, January 15. This was Dr. Boteler's third term as health officer. He has accepted the position of assistant health officer of the District of Columbia and will reside in Washington.

The Hodgen Lecture.—Dr. Lewis S. McMurtry, Louisville, Ky., will deliver the Hodgen Lecture for 1923, under the auspices of the St. Louis Surgical Society and the Medical Fund Society at the University Club, St. Louis, January 24. His subject will be "The Birth of Scientific Surgery."

Physicians in the General Assembly.—The following physicians were elected to the general assembly at the recent elections: representatives, Dr. Frederick L. Ogilvie, Scott County; Dr. Robert F. McReynolds, Knox County; Dr. Heine Marks, City of St. Louis, fifth district; Dr. William A. Porter, Lafayette County, and Dr. L. V. Cockrum, Lewis County. Dr. Benjamin B. Tout of Cass County was reelected to the senate.

NEVADA

Physician Elected to Legislature.—Dr. Roy W. Martin, superintendent of the Las Vegas Hospital, has been elected to the state legislature.

New Health Ordinance.—At a meeting of the city council of Reno, December 26, a new health ordinance was drawn, providing that physicians must report all contagious and communicable diseases except in certain specified instances. It also contained a clause making it compulsory for any person under arrest and suspected of being infected with any disease considered dangerous to the public health to submit to a physical examination, and treatment if necessary, at his own expense or, if indigent, at public expense.

NEW JERSEY

Personal.—Dr. Charles J. Murn was recently elected president of the board of health of Patterson.——Dr. George B. Ellor, a former commissioner, has been appointed health commissioner of Bloomfield to succeed Dr. Benjamin F. Sturges. Dr. Morgan D. Hughes has resigned as member of the board of health of Bloomfield.——A dinner was given to Edward Weston, LL.D., Sc.D., Newark, head of the Weston Electrical Instrument Company, at the Hotel Commodore, New York, December 28, at which he was presented with a silver loving cup by the guests.——Drs. George V. V. Warner, Redbank, and John C. Clayton, Freehold, were elected president and secretary, respectively, of the Monmouth County Medical Society, at the annual meeting at Freehold, recently.

NEW YORK

Brooklyn Plans Clinics.—The department of public welfare, in cooperation with the Medical Society of the County of Kings and the Long Island Hospital Medical College, Brooklyn, will hold clinics at the Kings County Hospital during January and February, it was recently announced by Commissioner of Public Welfare Coler. Invitations were sent to the medical profession to attend the clinics in internal medicine, surgery, gynecology, obstetrics, neurology and other subjects and also to attend the formal exercises of the opening of the new dispensary and operating suite of the Kings County Hospital, January 12.

Hospital News.—The pavilion for handicapped children of Ontario County, erected at Memorial Hospital, Canandaigua, was formally dedicated, December 27. This pavilion was the gift of the Canandaigua Rotary Club.——The DeWitt Sanatorium has given up its plans for establishing an institution for the treatment of maternity and surgical cases at 168 Hancock Street, Brooklyn. This change of plans is the result of opposition on the part of residents in the neighborhood who fear that such an institution would decrease real estate values and increase fire hazards.——The Veterans' Mountain Camp of the American Legion, Tupper Lake, which has been remodeled to conform to state requirements for a hospital of its type, will be formally opened in the near future, the work having been completed. The Knights of Columbus have recently given to the camp, on account, $1,000 of the $10,000 recently pledged by them to the movement.—— St. Mary's Hospital, Rochester, has started construction of a new nurses' home, to be erected at a cost of $300,000. This is to be the first unit of a new hospital group in Rochester, the plan for which has been developed by the hospital authorities, with Dr. S. S. Goldwater, New York, as consultant. The new outpatient department of St. Mary's Hospital was formally opened, January 2, with Dr. Leo F. Simpson as director of the surgical clinic, and Dr. Benjamin F. Duffy, of the medical clinic.——The United Hospital Fund Campaign, to raise a fund of $1,300,000 for extension and improvement of services at Rochester General Hospital, Rochester Highland Hospital and the Homeopathic Hospital of Rochester, was conducted, January 12-20.——The Monroe County Tuberculosis Sanatorium, of which Dr. John J. Lloyd is superintendent, will give a course in diagnosis and treatment of tuberculosis to Rochester physicians, beginning January 12. There will be eight sessions on Friday mornings.

New York City

Guitry's "Pasteur" Coming to America.—At the Pasteur centenary meeting held at the New York Academy of Medicine, January 10, the president of the academy, Dr. George David Stewart, announced that the rights to Sacha Guitry's play "Pasteur" have been acquired for Henry Miller. The play will be presented by the Charles Frohman Company, Henry Miller taking the title rôle. The English version of the play has been made by Arthur Hornblow, Jr.

Chandler Foundation.—Robert Eckele Swain, Ph.D., professor of chemistry and head of the department of chemistry of Stanford University, gave the Charles Frederick Chandler Foundation lecture at Columbia University, January 9, on the subject of "Atmospheric Pollution by Industrial Wastes." In 1910, friends of Prof. Charles F. Chandler presented a sum of money to Columbia University for the foundation, the income from which is used to provide a lecture by an eminent chemist and a medal which is presented to the lecturer in recognition of his achievements in science.

Personal.—Dr. Fred H. Albee has been invited to give the opening address at the Congress of Orthopedic Surgeons, to be held in Amsterdam, Holland, May 25-26.——Dr. Boris Bogen, head of the Joint Distribution Committee for Russian and Polish Relief, Dr. I. G. Kligler of the Rockefeller Institute and head of the Palestine Malarial Research Unit, and Dr. Otto Shulhof, director of recreation for New York, sailed, December 16, on the White Star liner *Majestic*, for Cherbourg and Southampton.——Drs. William J. Robinson and Martin Rehling were reelected president and secretary, respectively, of the medical board of the Bronx Hospital and Dispensary, December 28.——Dr. Herman Baruch returned from Europe on the White Star liner *Majestic*, January 5.——Dr. Robert Bárány, professor of otology at the University of Upsala, Sweden, gave an address on "Development and Problems of Neuro-otology" before the New York Academy of Medicine (section on otology and neurology and psychiatry), January 13.——Dr. Henry O. Reik has tendered his resignation as head of the American Institute of Medicine and editor of the *International Medical and Surgical Survey*.——Dr. Hans Zinsser, professor of bacteriology at the College of Physicians and Surgeons and bacteriologist to the Presbyterian Hospital, will join the staff of the Harvard Medical School, Boston, next autumn, as professor of bacteriology and immunology.

OHIO

New State Health Commissioner.—Governor Donahey has appointed Dr. John E. Monger, Columbus, as state director of public health to succeed Dr. H. H. Snively. The appointment was announced, January 3, on receipt of definite declination from Dr. Allen W. Freeman, professor of public health at Johns Hopkins University, Baltimore, whose five-year term as state health commissioner was broken by the reorganization law last July.

Columbus Academy of Medicine.—At the annual meeting and banquet of the academy, December 11, legislative action necessary to secure the abolition of the office of coroner and provide for a medical examiner and staff, with proper psychiatric and pathologic divisions, under the county prosecutor; and the creation of a central bureau of criminal identification within the state department of welfare, which would take the finger prints of all persons arrested in the state regardless of the nature or outcome of the case, was indorsed. The pathology of crime was discussed, and Charles De Woody, director of the Cleveland Association for Criminal Justice, spoke on "Crime and the Administration of Criminal Justice."

Personal.—Dr. Carl C. Hugger, Columbus, has been appointed resident obstetrician and gynecologist of the New York Polyclinic Hospital.——Dr. Wilbur G. Carlisle, Bucyrus, sustained injuries, and his brother was killed, recently, when their automobile was struck by a train. It is reported that Dr. Carlisle will recover.——Dr. Michael R. Haley, Piqua, has been awarded the French medal of honor for meritorious services in France during the World War.—— Dr. Theodore E. Myler has resigned as health officer of Geauga County.——Dr. Archibald C. Adams, republican candidate for coroner of Allen County, was reelected for the third term at the November election.——Dr. John H. Berry, superintendent of the Athens State Hospital, was elected president of the Athens County Medical Society at the annual meeting.——Drs. John J. Reynolds and Dyle J. Slosser were elected president and secretary, respectively, of the Defiance County Medical Society, recently.——Dr. Carl L. Mueller has been elected health commissioner of Wapakoneta to succeed Dr. George L. Lyne, who resigned, January 7.——Dr. Charles S. Runk, New Lexington, has been appointed health commissioner of Perry County.——Dr. William H. Carey, Bellefontaine, has been appointed health commissioner of Logan County for the second term.——Dr. Orange H. Thomas, Fremont, has been reelected health commissioner of Sandusky County.

Mental Hygiene Clinic in Cincinnati.—The director of the Community Chest and Council of Social Agencies of Cincinnati has submitted to the board of directors an outline for a mental hygiene clinic. The plan has been approved and a special committee has been appointed under Dr. Emerson A. North to proceed to establish a working organization. It is hoped to clear up mental problems in the field of dependency, to develop a method of handling effectively the mental problems of the juvenile and police courts and to supply the public schools with the facilities necessary for dealing with problems in conduct disorders. The clinic is to work in cooperation with these various agencies. It is hoped to make a social study of the home conditions of the various patients, to have physical examinations, and psychologic examinations for determining intelligence levels, and finally to enlist the aid of a psychiatrist in an endeavor to discover evidences of developing mental disease, conflicts or wrong mental attitudes. Cases needing medical attention will be referred to the established hospitals and clinics and those in need of adjustment to the educational bureau. Cases involving home conditions were to be referred to the social agencies or social workers of the clinic and cases requiring psychiatric treatment would either be treated directly in the clinic or be referred to some of the established phychiatric institutions. The plan is comprehensive, and its progress will be watched with general interest throughout the country.

OREGON

Central Willamette Valley Medical Association.—At the annual meeting of the association in Eugene, December 7, Dr. William H. Davis, Albany, was elected president; Dr. Robert L. Wood, Lebanon, vice president, and Dr. Frank E. Beauchamp, Albany, secretary-treasurer.

Granite City Hospital.—This institution, recently purchased by Jesse Winburn and renovated, has been opened to physicians and dentists, offering equal privilege and service to all members. It will be known as the Ashland Community Hospital. At a meeting of the physicians and dentists recently, appreciation for this gift to Ashland and the medical profession was voiced, and a plan to buy a community ambulance was launched. Winburn was a former patient at the hospital.

Personal.—Dr. Jacob E. Shearer, Tillamook, has been appointed chairman of the state hospitalization board for

disabled ex-service men.——Dr. Eugene W. Rockey was unanimously elected commander of Portland Post No. 1 of the American Legion for 1923 at the annual meeting.——William C. Munly, captain, M. C., U. S. Army, for three years in Coblenz, Germany, with the American Army of Occupation, recently returned to this country.——Dr. Edgar O. Dutro, Hood River, who was forced to give up the practice of medicine a year ago owing to ill health, has resumed his practice.——Dr. William Donald Nickelsen, who has been in charge of the dispensary at Moscow, under the American Relief Administration, has returned to Portland from Russia.——Dr. Henry C. Jefferds, Portland, recently sailed on the *Laconia* for a tour of the world. The ship was chartered for this purpose and is expected to circle the globe in less than three months.——Major Richard B. Dillehunt, M. O. R. C., dean of the University of Oregon Medical School, Portland, has been assigned to General Hospital No. 46 (reserve) by the War Department.

PENNSYLVANIA

Philadelphia

New Surgical Society Organized.—The George P. Muller Surgical Society of the Post Graduate School of the University of Pennsylvania has recently been organized. Section meetings will be held every second and fourth Monday in the month. Papers are furnished by the graduate surgical students.

Academy of Natural Sciences of Philadelphia.—At the annual meeting of the academy, December 19, Richard A. F. Penrose, Ph.D., was elected president to succeed John Cadwalader, LL.D. Edwin G. Conklin, Ph.D., and Dr. Henry Skinner, Philadelphia, were elected vice presidents, and George Vaux, Jr., treasurer. Dr. Spencer Trotter, Swathmore, was elected librarian.

Physicians Held in Bail.—Seven physicians who offered "busy practice" as their only excuse were brought before Magistrate Grelis and held in $400 bail each on charges of failing to report births in accordance with the state law. The charges will be removed as soon as they comply with the law. The prosecution was instituted by Dr. Wilmer R. Batt, state registrar of vital statistics.

Personal.—Dr. J. Blair Spencer has resigned as director of the local health council for the prevention of tuberculosis, in order to devote his time to his office as assistant director of public welfare. During his period of service with the health council, Dr. Spencer turned his salary of $8,000 a year over to charity.——Dr. Edward Martin has resigned as state health commissioner, following four years' service.——Dr. John B. Deaver, Philadelphia, conducted a surgical clinic at the Presbyterian Hospital, Charlotte, N. C., January 5.——Dr. Horatio C. Wood, professor of materia medica, Philadelphia College of Pharmacy and Science, will deliver the eighth lecture of the free public course given by the college, January 24, on "The Cost of Patent Medicine." Prof. E. Fullerton Cook, Ph.M., delivered the seventh lecture, January 17, on "The Making of Medicine (From the Time of the Pharaohs Down to the Scientific Age of Today)."——Dr. Victor George Heiser, New York, has been appointed commissioner of health to succeed Dr. Edward Martin, and Dr. Ellen C. Potter will succeed Dr. John M. Baldy as commissioner of public welfare.

RHODE ISLAND

Personal.—Dr. Charles H. Holt has been elected mayor of Pawtucket. Dr. Holt, previous to taking the oath of mayor, resigned the position as head of the department of health, which he has held for seven years. He will be succeeded by Dr. Florian A. Ruest, a graduate of Laval University, Montreal, Canada.

TENNESSEE

Health Board Eliminates Two Bureaus.—The venereal disease and the oral hygiene departments will be discontinued by the state board of health, it is announced. The work of the oral hygiene department overlaps that of the rural sanitation bureau, while lack of cooperation on the part of some of the cities of the state is assigned as the reason for the elimination of the venereal disease bureau.

TEXAS

Public Education Campaign.—Responding to an appeal from the state board of medical examiners for amendment of the medical practice act so as to make the law enforceable, the State Medical Association began a campaign of public health education, January 1. Dr. C. M. Rosser is chairman of the educational campaign. Six physicians made lecture tours of north and east Texas during the first week. A dinner was given at Greenville for members of the state legislature, heads of civic organizations and the medical profession, to discuss the situation. Dr. Joseph D. Becton, president of the State Medical Association, attended the dinner.

VIRGINIA

State Health Conference.—A conference of state health workers was held in Richmond, December 28-30. Dr. Warren F. Draper, U. S. Public Health Service; Dr. James A. Hayne, secretary of the state board of health of South Carolina, and Dr. Ennion G. Williams, state health commissioner, gave addresses at the session.

Personal.—Dr. Benjamin J. Baker, Norfolk, following a long illness and a year's rest from work, has resumed his practice.——Drs. Willie S. Snead and Samuel Downing were elected president and secretary-treasurer, respectively, of the Warwick County Medical Society, at the annual meeting in Newport News, December 15.

WASHINGTON

Hospital News.—Sealed proposals were received, January 16, by the director of the U. S. Veterans' Bureau, Washington, D. C., for the construction of a neuropsychiatric hospital at American Lake, Tacoma, consisting of twenty-eight fireproof buildings, complete, with water, lighting, heating and sewer systems. Plans and specifications for the institution have been completed.——A new building was recently completed at Our Lady of Lourdes Hospital, Pasco, at a cost of $135,000. The hospital staff has been organized and a training school has been opened.

Personal.—Dr. William H. Anderson, Seattle, has been appointed superintendent of the King County Hospital, Seattle, to succeed Dr. James Tate Mason. The entire board of the hospital will be reorganized, Dr. Anderson announced. Dr. George M. Horton has been named consulting chief of the institution on the new board.——Dr. Joseph L. Lane has returned to Seattle following eighteen months in Europe, where he took graduate courses in London, Paris, Berlin and Vienna.——Dr. Joseph H. Fitz, Montesano, has been appointed health commissioner of Grays Harbor County to succeed Dr. Raymond J. Cary of Elma.——Dr. Joseph P. Kane, former health officer of Tacoma, was elected president of the Pierce County Medical Society, and Dr. Warren B. Penny, secretary-treasurer, for 1923.

CANADA

New Mental Hygiene Committee.—At a meeting of the Montreal branch of the Canadian National Committee for Mental Hygiene, at the end of December, the Mental Hygiene Committee of Montreal was formed. Dr. Colin K. Russel was elected president of the committee; Dr. F. H. Mackay, secretary, and Dr. Gordon S. Mundie, medical director.

New Medical Society Formed.—At a meeting of District No. 1 of the Ontario Medical Association, recently held at Chatham, the Kent County Medical Society was organized, with Dr. James W. Rutherford, Chatham, president, and Dr. Ernest C. Riseborough, Chatham, secretary. Dr. Edward R. Secord, Brantford, and Dr. Thomas C. Routley, Toronto, president and secretary, respectively, of the Ontario Medical Association attended the meeting and banquet.

University News.—The following appointments have been made by the board of governors of the University of Toronto, department of medicine: assistant professors of ophthalmology, Drs. Duncan N. MacLennan and William Lowry; department of obstetrics and gynecology; assistant professor, Dr. Frederick A. Cleland; associates, Drs. William A. Scott and John G. Gallie.——The library of Western University was recently the recipient of a volume of "The Aphorisms of Hippocrates and the Sentences of Celsus." This book is considered one of the earliest medical books written.

Federation of American Societies for Experimental Biology.—The annual meeting of the federation, comprising the physiologic, biochemical, pharmacologic and pathologic societies, was held in Toronto, December 27-29. Reports of elections received up to date are as follows: American Society of Experimental Pathologists: Dr. Eugene L. Opie, professor of pathology at Washington University Medical School, St. Louis, was elected president. Dr. Joseph Erlan-

ger, professor of physiology at Washington University School of Medicine, St. Louis, was reelected treasurer of the American Physiological Society, and Prof. Philip A. Shaffer, Ph.D., professor of biochemistry at Washington University School of Medicine, St. Louis, was elected president of the American Society of Biological Chemists. Dr. Shaffer also served as chairman of the executive committee of the federation of the American Societies for Experimental Biology. At the meeting of the federation the following councilors were elected for the ensuing year: Drs. John R. Murlin, Rochester, N. Y.; S. A. J. Carlson, Chicago; C. W. Green, Missouri; Joseph Erlanger, St. Louis, and A. B. Luckhardt, Chicago.

GENERAL

American Society for Clinical Investigation.—The fifteenth annual meeting of the society will be held in Atlantic City, N. J., April 30. Those submitting titles of papers to be read before the meeting must accompany them with abstracts of their papers (not more than 200 words). Titles should be sent to Dr. James H. Means, secretary of the society, 15 Chestnut Street, Boston, not later than March 1.

Bacteriologists Elect.—At the annual meeting of the Society of American Bacteriologists in Detroit, December 27-29, the following officers were elected for the ensuing year: president, Prof. Edwin G. Hastings, Madison, Wis.; vice president, Dr. Arthur Parker Hitchens, major, M. C., U. S. Army, Washington, D. C., and secretary-treasurer, J. M. Sherman, Dairy Division, U. S. Bureau of Animal Industry, Washington, D. C.

Rockefeller Purchases Pasteur Home.—John D. Rockefeller recently purchased, for 40,000 francs, as a centenary gift to the people of the village, the cottage at Dôle, France, in which Louis Pasteur was born 100 years ago. The French parliament has given an additional sum of 20,000 francs with which the cottage will be remodeled into a public museum. It will be presented to the people of the commune of Dôle. The property and house formerly belonged to Pasteur's father, a tanner.

Association of American Medical Colleges.—The thirty-third annual meeting of the association will be held at Ann Arbor, Mich., March 2-3, under the presidency of Dr. Charles P. Emerson, Indianapolis. The chief topic of discussion will be the new medical curriculum. Dr. Harley E. French, dean of the University of North Dakota School of Medicine, will speak on "Problems of Two Year Medical School," and Prof. Theodore Hough, Ph.D., dean of the University of Virginia Department of Medicine, will read a paper entitled "Shall the Premedical Requirement Be Increased?" Dr. Frederick C. Zapffe, Chicago, is secretary of the association.

National Health Council.—At the annual meeting of the National Health Council at its New York offices, January 6, the following officers were elected for the ensuing year: chairman, Lee K. Frankel, Ph.D., to succeed Dr. Livingston Farrand of Cornell University; vice chairman, Dr. Frankwood E. Williams, medical director of the National Committee for Mental Hygiene; secretary (reelected), Dr. Samuel J. Cumbine, Topeka, secretary of the Kansas State Board of Health, and treasurer (reelected), Dr. William F. Snow, New York, general director of the American Social Hygiene Association.

Congress on Surgery to Meet in London.—The international Congress of Surgery issues an advance program for the meeting, which will occur in London, July 16-21. The sessions will be held under the presidency of Sir William Macewen. Among American surgeons who are included on the program are the following: Drs. W. R. MacAusland, Boston, "Arthroplasties"; Harvey Cushing, Boston, "Surgery of the Endocrines"; C. Frazier, Philadelphia, "Surgery of Traumatic Nerve Lesions"; George Crile, Cleveland, "Operative Shock"; William J. Mayo, Rochester, "The Splenic Syndromes," and Major A. P. Hichens, Washington, "Serum and Vaccine Therapy." The arrangements for the congress are in the hands of the secretary, Dr. L. Mayer, who may be addressed at 72 Rue de la Loi, Brussels.

American Association for the Advancement of Science.—At a recent meeting of the American Association for the Advancement of Science, held at Cambridge, Mass., Charles D. Walcott, LL.D., Ph.D., secretary of the Smithsonian Institution, Washington, D. C., was elected president. Professor Walcott is president of the National Academy of Sciences. Prof. E. W. Washburn, Ph.D., University of Illinois, was elected vice president of the chemical section.——A special number of *Science* containing the address of the retiring president of the American Association for the Advancement of Science and the proceedings of the association of the sections of the affiliated national scientific societies meeting at Boston during convocation week was issued recently.——Prof. Charles E. Mendenhall, Ph.D., of the University of Wisconsin, was elected president of the American Physical Society.——During the meeting of the sections of the affiliated national societies at Harvard University, Prof. Lewis M. Terman, Stanford University, Palo Alto, Calif., was elected president of the American Psychological Association and Prof. John Anderson, Johns Hopkins University, Baltimore, secretary.

Bequests and Donations.—The following bequests and donations have recently been announced:

Cambridge Hospital, Cambridge, Mass.; Free Hospital for Women, Brookline; the Perkins Institution and Massachusetts School for the Blind, Watertown, and the Massachusetts Charitable Eye and Ear Infirmary, Boston, shares in the $375,000 estate of Charles G. Green, Cambridge.

Childrens' Hospital, Philadelphia, and the Children's Seaside Home, Atlantic City, N. J., on the death of the annuitants, one half of the principal of the $125,000 estate of the late Major Charles W. Bailey of Philadelphia.

Massachusetts Homeopathic Hospital, Boston, $100,000; Children's Hospital, the Boston Floating Hospital, the Eye and Ear Infirmary and the Massachusetts Association for Promoting Interests of Adult Blind, each $10,000, by the will of Arthur F. Estabrook.

San Antonio, Calif., for the establishment of a hospital, $75,000, by Mrs. James Paul.

Eastern Maine General Hospital, Bangor, $75,000 from "a friend."

Roosevelt Hospital, New York, the residuary estate of Helen T. Cole, appraised at $70,634.

Mount Sinai Hospital, New York, as a nucleus for medical education, $25,000 from Mr. Joseph F. Cullman.

Children's Hospital, Birmingham, Ala., $25,000, from Mr. Crawford Johnson of that city.

British Old Peers's Home, Riverside, Ill., $22,000; donation of a site valued at $10,000 by Mr. Samuel Insull of Chicago, and $12,000, the result of a bazaar held by the Daughters of the British Empire in Chicago.

Hale Hospital, Haverhill, Mass., $20,000; Old Ladies' Home, $10,000, and the Haverhill Children's Aid Society, $500, by the will of George C. Wadleigh of Haverhill.

Jane Lamb Memorial Hospital, Clinton, Iowa, $11,000, to furnish rooms in the new addition, collected at a festival held for that purpose.

Sebring, Fla., $10,000, for the establishment of a charity hospital by Mr. and Mrs. George E. Sebring.

New York Neurological Institute, New York, $10,000, by the will of the late Dr. Pearce Bailey of New York.

Denver Sanatorium of the Jewish Consumptives' Relief Society, $10,000, the proceeds of a ball held by the ladies' auxiliary of the society in New York City.

Methodist Episcopal and St. Christopher's hospitals, Philadelphia, $5,000 each for the maintenance of free beds; the Children's Seaside Home, Atlantic City, N. J., $2,000, by the will of Annie W. Buckley.

Edna P. Alter Mexican Settlement Association, Pasadena, Calif., $8,000, for a maternity ward, anonymously.

St. Luke's Hospital, New York, $7,500, the income to be used for members of the Artists' Fund Society, by the will of George H. Story.

Exeter Cottage Hospital, Exeter, N. H., $5,000, anonymously; $500, by the will of Miss Gordon of Washington, D. C.; $500, under the will of Mrs. Soule; $100, by the will of the late Miss Ann Flagg, and $100, from the father of a patient.

Touro Infirmary, New Orleans, for maternity work, $5,000, by Dr. J. W. Newman.

Presbyterian, Eye, Ear and Throat Hospital, Baltimore, $3,000, by the will of Mrs. Mary S. Butler.

St. Vincent's and St. John's hospitals, Cleveland, each $1,000 by the will of F. H. Glidden.

Spartanburg General Hospital, Spartanburg, S. C., the greater part of the income from the estate of Mrs. Alice M. Lee, for the founding of the "Boyce Lee Memorial" for charity patients.

Flagler Hospital, St. Augustine, Fla., property facing the institution, for a park to be maintained by the hospital trustees; by Mr. Don H. Bacon.

Durham (N. C.) County Health Department, a touring car, by the Civic League of Durham.

Annual Congress on Medical Education, Licensure, Public Health and Hospitals.—The annual Congress on Medical Education, Licensure, Public Health and Hospitals will be held at the Congress Hotel, Chicago, March 5-7, 1923. This year the U. S. Public Health Service will participate in the conference. The provisional program of the congress follows. On the first day, March 5, during the forenoon the Council on Medical Education and Hospitals, will present a program as follows:

1. Remarks by Chairman, Dr. Arthur Dean Bevan, Professor of Surgery, Rush Medical College, Chicago.
2. Report of the Secretary, Dr. N. P. Colwell, Secretary of the Council on Medical Education and Hospitals, Chicago.
3. Report on Investigation of Graduate Medical Schools, Dr. Louis B. Wilson, Director of the Mayo Foundation of Medical Education and Research, Rochester, Minn.
4. The Medical Curriculum, coordination of courses to increase efficiency, Dr. E. Stanley Ryerson, Secretary, University of Toronto Faculty of Medicine, Toronto.
5. Nursing Education and Service. A Report from a Special Committee of the Council on Medical Education and Hospitals, by the Chairman, Dr. Robert W. Lovett, Professor of Orthopedic Surgery, Harvard Medical School, Boston.

On Monday afternoon the Federation of State Medical Boards of the United States will present the program as follows:

1. Enforcement of the Medical Practice Act, Dr. H. M. Platter, Secretary of the Ohio State Medical Board, Columbus.
2. Needed Revisions in Medical Licensure in Accordance with Present Day Medical Education, Dr. Kendrick C. Babcock, Provost of the University of Illinois, Urbana.
3. A Single Standard for Admission to the Practice of Medicine. By Harry Eugene Kelly of the Chicago Bar.
4. The Hospital Intern Year as an Essential for the License, Dr. Alexander MacAlister, Secretary of the New Jersey State Board of Medical Examiners, Trenton.

In the forenoon of Tuesday, March 6, the Association of American Medical Colleges will present the following program:

1. The Danger of a Stereotyped Curriculum by Dr. Charles P. Emerson, Dean and Professor of Medicine of the Indiana University School of Medicine, Indianapolis.
2. Present Ideals of the Physical Plant in Medical Education.
   (a) Charles R. Bardeen, Dean and Professor of Anatomy of the University of Wisconsin Medical School, Madison.
   (b) Dr. G. Canby Robinson, Dean of Vanderbilt University Medical Department, Nashville.
3. The Art of Medicine, by Dr. Irving D. Cutter, Dean of the University of Nebraska College of Medicine, Omaha.

On Tuesday afternoon the American Conference on Hospital Service will give the following program:

1. Introductory Remarks by Dr. Frank Billings, President of the American Conference on Hospital Service.
2. The Rôle of Non-Medical Clinical Assistants in Hospitals Without Interns, by Dr. S. S. Goldwater, Director, and Dr. W. M. Bluestone, Assistant Director, Mt. Sinai Hospital, New York.
3. Liability of the Hospital for the Acts of Its Servants, by John A. Lapp, Director, Department of Social Action of the National Catholic Welfare Council, Chicago.
4. The Relation of the State University Hospital to the Medical Profession, by Dr. C. P. Howard, Professor of Medicine in the State University Iowa College of Medicine, Iowa City.
5. Annual Report of the Hospital Library and Service Bureau, by the Director, Miss Donelda R. Hamlin, Chicago.

On Wednesday, March 7, during the forenoon the Council on Health and Public Instruction will present the following program:

1. "Hygeia," A Journal of Individual and Community Health, by Dr. Victor C. Vaughan of the Editorial Board.
2. Symposium: The Medical Profession and the Laity.
   (a) From the Standpoint of the Layman, Dr. Walter Dill Scott, President of Northwestern University, Evanston, Ill.
   (b) From the Standpoint of the Health Officer, Dr. Watson S. Rankin, Secretary of the North Carolina State Board of Health, Raleigh.
   (c) From the Standpoint of the Practitioner, Dr. Frederick C. Warnshuis, Secretary of the Michigan State Medical Association, Grand Rapids.
   (d) From the Standpoint of the Board of Trustees of the American Medical Association. Dr. Frank Billings, Chicago.

On Wednesday afternoon the program given under the auspices of the U. S. Public Health Service will deal with:

The Education of Sanitarians and the Future of Public Health in the United States.—A report of progress from the Committee of Fifteen appointed by Surgeon General Cumming of the United States Public Health Service at the Conference held in Washington, March 14, 1922.

Tuesday evening the Federation of State Medical Boards will hold its annual dinner followed by its regular executive session.

LATIN AMERICA

Personal.—Dr. Juan N. Corpas has been appointed dean of the medical school of Bogotá, Colombia, succeeding Dr. L. F. Calderón, who had filled the position for many years.

Cancer Ward in Havana.—A ward for cancer patients has been set aside at the Havana Municipal Hospital. Dr. Gustavo de los Reyes will be in charge of the radium treatment.

Public Health Propaganda in Salvador.—The department of public health of El Salvador has begun publishing in the newspapers a series of articles on infant care and feeding.

New Argentine Journal.—The Phthysiologic Association of the Tornú Hospital in Buenos Aires has begun the publication of a journal, *Revista de la Asociación de Tisiologia del Hospital Tornú*. The editor is Dr. Nicolás Romero. Plans are now being made in Argentine for the organization of a society of phthisiology having as its nucleus the present Tornú society.

New Hospitals.—A new hospital is being built at Loja, Ecuador, the proceeds of 6 per cent. of the provincial taxes being employed for this purpose.——A children's hospital and a general hospital were recently opened in Montevideo: Pedro Visca Hospital and Pasteur Hospital, respectively.——A day nursery was established recently at Quito, Ecuador, by the Child Welfare Society. The medical director is Dr. J. B. Arzube Cordero.

Sixth Latin American Medical Congress.—According to a statement by Dr. F. M. Fernández, secretary of the medical congress held recently at Havana, not less than thirty-one resolutions were adopted. Recommendations were made for the erection of a statue of Carrión at Lima, as urged by the previous congress; establishment of medical service in all steamships; organization of cancer institutes in all countries now lacking such institutes; eradication of plague, yellow fever, and hookworm disease, and control of malaria; organization of a Pan-American association of eugenics and homiculture at the Pan-American conference to be held at Santiago, Chile, in March; appointment of a committee to prepare a model bill regulating importation and sale of narcotics; enforcement of the Montevideo convention as to reciprocity of professional diplomas; study of hydatid disease, paragonimiasis and bronchopulmonary spirochetosis; creation of anatomic museums in all Latin American medical schools; organization of a Latin American Medical Association with headquarters at Montevideo, charged with the duty of publishing a journal; standardization of medical courses, terminology and pharmacopeias; restriction of Chinese immigration; simplification of antirabic treatment; public education in heart diseases and their causes; adoption of laws against abortion; support of the Gorgas institute at Panama; active campaigns against venereal diseases; uniformity in quarantine laws; protection of the health of pregnant women; creation of a Latin American committee on nerve and mental hygiene. The next Latin American congress will meet at Mexico City within a period of not less than two and not more than three years.

FOREIGN

The Medical Press and Pasteur.—Our exchanges for December, from every quarter of the globe, bring one long paean of laudation of Pasteur.

Cajal Street.—A Spanish journal gives a list of more than 100 towns in Spain which have renamed a street in honor of Prof. Ramón y Cajal. Some have installed large artistic tablets to designate the street.

Gift for Glasgow University.—Mr. Henry Mechan has donated £25,000 (approximately $115,000) to the University of Glasgow for the foundation of a new chair of public health in the university.

Cheese Poisoning Traced.—Dr. Cameron Macaulay, assistant medical officer of health of Dover, England, recently traced 126 cases of food poisoning to a single red Canadian cheddar cheese, portions of which had been distributed to eighty households.

Election of Officers.—The National Academy of Medicine at Madrid recently reelected Dr. Carlos M. Cortezo president; Dr. A. Fernández Caro, vice president; Dr. Espina y Campo, librarian; Dr. Nicasio Mariscal, secretary, and Dr. Martin Bayod Martinez, treasurer.

Committee on Hygiene Meets in Geneva.—The committee on hygiene of the League of Nations convened at Geneva, January 8. Among the questions discussed was the nomination of a representative of the American hygienic service as a member of the committee, and collaboration with the international sanitary bureau at Washington, D. C. Dr. Bernard Nocht, director of the Hamburg Institute, has been appointed a member of the health commission of the league.

Tributes to Physicians.—The city of Ocaña recently placed a tablet on the house in which Dr. Espina y Capo of Madrid was born, and a street was renamed in his honor. ——Professors Jemma and Caronia of Naples were recently tendered a banquet as a token of appreciation for their work in pediatrics. It has resulted in founding an actual Neapolitan school of pediatrics. Their publications have made their names well known in this country. They are the editors of *Pediatria*, which is regularly summarized in the Current Literature department.

The Next German Congress for Internal Medicine.—The date for the Thirty-Fifth Kongress für innere Medizin has been appointed as April 9 to 12, 1923, at Vienna. Prof. K. F. Wenckebach—at present in this country—is to preside, and the two subjects appointed for discussion are "Lethargic Encephalitis" and "Arterial Hypertension." Economo of Vienna and Nonne of Hamburg open the discussion on the first topic, and Durig of Vienna and Volhard of Halle, on the second. No other communication on these two topics will be allowed, but free discussion is planned. Communi-

cations can be addressed to Professor Wenckebach, Lazarettgasse 14, Vienna.

The Beneke Prize.—Our German exchanges give the particulars for competition for the endowed Beneke prizes, offered by the University of Göttingen. The competing articles must be sent in anonymously and be received before Aug. 31, 1924. The topic is "Experimental Research on the Structure of the Carbon Framework in the Biliary Acids." The first prize is 1,700 and the second 680 marks. For the year 1925, the topic is "Consequences of Amitotic Cell Division for the Constitution of the Nucleus as Studied in Plants and Animals (Exclusive of Unicellular Organisms); in particular, the behavior of the chromosomes as to the shape and numbers when a cell, after amitotic division, divides again by karyokinesis." Also the vigor of development of cells after amitotic division is to be investigated. The prize is 1,000 marks.

Foreign Congresses.—At the International Congress of Ophthalmology, held in Washington in 1922, the invitation of the ophthalmologic societies of Great Britain and Ireland to hold the next congress in London in 1925 was accepted. A general committee consisting of representatives of the inviting societies has since met and has formed an executive committee, empowered to make arrangements for the 1925 congress. It will be held in London, July 21-24. The three official languages will be English, French and German. The subscription for membership has been fixed at the sum of £2 ($9.30). Invitations will be sent to the principal ophthalmologic societies or other representative bodies in every nation, asking them each to nominate a delegate to the congress who would be responsible for promoting its interests in the country which he represents. Leslie Paton, F.R.C.S., 29 Harley Street, London, W., is the secretary.——At the annual meeting and banquet of the British Association of Economic Biologists at the University of Manchester, December 15, Dr. W. Laurence Balls introduced a discussion on "Genetics in Relation to Applied Biology," which was followed by a discussion on the place of applied biology in universities and on the relation of biology to medicine.——The annual meeting of the Royal Surgical Aid Society was held in London, December 8. This was the diamond jubilee (fiftieth) anniversary of the society.

Personal.—Dr. W. A. Lethem, assistant medical officer of the port of Liverpool, has been awarded the diploma in tropical medicine by the University of Liverpool.——Dr. F. J. Paley was recently invested with the Order of the Knighthood of St. Gregory the Great, conferred on him by the late pope in recognition of his work among the clergy. Following a banquet in his honor, Dr. Paley stated that during the twenty-three years' of its existence, the Diocesan Nursing Home of Brighton had cared for more than 1,000 priests. This included sick priests from England, Ireland, Italy, Spain, France and the South American countries.——Sir William Thorburn delivered the Bradshaw lecture in the theater of the Royal College of Surgeons, December 8, on "The Surgery of the Spinal Cord."——Dr. Ernest H. Starling, professor of physiology in the University of London, has been appointed the first Foulerton professor, under the foundation of the Royal Society, created by the will of Miss L. A. Foulerton.——Sir William H. Bragg, Quain professor of physics in the University of London, has been elected a corresponding member of the Paris Academy of Sciences in the section of physics.——Major Gen. O. E. P. Lloyd, V. C., has been appointed colonel commandant of the R. A. M. C. The rank is next to that of colonel-in-chief.——Dr. Alexander G. Gibson has been appointed lecturer in morbid anatomy at the University of Oxford.——Prof. T. Rovsing of Copenhagen has been elected an honorary member of the Italian Urologic Society.

Deaths in Other Countries

Dr. **Isaac B. Davenport,** well known dental surgeon of the American colony of Paris where he had resided for more than forty years; Knight of the Legion of Honor, died at Le Vesinet, November 4, aged 68.——Dr. **John M. Finny,** Dublin; a former president of the Royal College of Physicians and of the Royal Academy of Medicine; King's professor in the practice of medicine; aged 81.——Dr. **Thomas H. Kellock,** December 19, in London, aged 59.——Dr. **R. J. Ryle,** justice of the peace; at Guy's Hospital, London, aged 67.——Dr. **Jules Chambrelent,** professor of obstetrics at the University of Bordeaux until called to Paris in 1918 to take charge of the national Saint Maurice maternity home. Three of his works had been awarded prizes by the national Academy of Medicine.——Dr. **Balard d'Herlinville,** president of the medical syndicate of the Havre district.

CORRECTION

Chest Measurement as a Gage of Body Weight.—In the article by Parmenter and Gray (THE JOURNAL, Dec. 23, 1922, p. 2159), the first half of the sixth paragraph should have read:

"Is the weight correlated with the girth as closely at expiration as at the calculated midrespiratory phase used in all our previous papers? This question is suggested by the preference for the former by army examiners[4] in order to forestall draft evasion on the ground of a finding less than the military minimum, and also by Oeder[5] in order to compensate approximately noticeable stoutness." The third footnote should have read: "Miles, W. R., and Root, H. F.: Personal communication to the authors." Footnote 4 was: "Gould, B. A.: Investigations in the Military and Anthropological Statistics of American Soldiers, New York, 1869. Baxter, J. H.: Statistics, Medical and Anthropological, of the Provost General's Bureau, Washington, D. C., 1875. Davenport, C. B., and Love, A. G.: Army Anthropology, Statistics, Medical Department, U. S. Army, Washington, D. C., 1921." Footnote 5 was: "Oeder, G.: *Berl. klin. Wchnschr.* **52**: 433 (April 26), 466 (May 3) 1915."

Government Services

Annual Report of the U. S. Veterans' Bureau

The first annual report of the U. S. Veterans' Bureau has been issued. The report covers all the World War relief activities of the United States government, and it is proposed to have one or more copies available for reference in all the offices, hospitals and schools of the bureau. The report contains a historical record of the statistics, appropriations and disbursements, and of the principal events leading to the consolidation of the government agencies that have administered the laws for relief of veterans of the World War. An appendix to the report contains reprints of all laws for the relief of veterans of the World War that were approved prior to June 30, 1922.

Proposed Bill to Aid Disabled Veterans

Through a bill introduced in the House by Representative Wursbach, the director of the Veterans' Bureau is directed to provide hospital, dispensary and other medical treatment, including surgical appliances, to all disabled veterans whose disability was incurred in line of duty. The service is to be rendered to veterans on the presentation of their pension certificates. The bill also provides that whenever a veteran, because of disability, is ordered to a hospital for treatment, transportation shall be furnished him by the Veterans' Bureau.

Vaccination Free to Postal Employees

The Postmaster General has arranged for the entire personnel of the postal system, numbering 333,000 employees, to be given free vaccination against smallpox and typhoid and paratyphoid fever. The Secretary of the Treasury has authorized all stations of the U. S. Public Health Service throughout the country to accommodate postal workers on their request. It is estimated that 90 per cent. of the railway mail service, which has 23,000 members, have been vaccinated. Postmaster General Work stated that not only the fifty-eight Public Health Service stations recently authorized to make free medical and physical examinations of postal employees, but all other stations, wherever located, will give free inoculations.

Immigration and Public Health

The Women's Advisory Council to the U. S. Public Health Service met with the Surgeon General, January 12, in Washington, D. C. Among the addresses delivered was one by Dr. Elizabeth B. Thelberg of Vassar College, chairman of the National Council of Women. Dr. Thelberg emphasized the importance of heredity in insanity, and said that 59 per cent. of those now receiving institutional care are from parents one or both of whom give a history of insanity in the family. She called attention to the large number of persons now being discharged from institutional care as cured, many of whom continue to procreate, reproducing in kind. Many other questions of interest were discussed, the program being mainly devoted to the subject of the effect of immigration in its many relations to the public health.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 23, 1922.

Surgeon Sued for Operating Without Patient's Consent

Owing to the great interest and importance of the case referred to briefly in THE JOURNAL, Dec. 30, 1922, p. 2243, a more complete account, taken from the *South African Medical Record*, which has just come to hand, may well be given: In the Cape Provincial Division of the Supreme Court before Justice Watermeyer and a jury, a suit for damages in the amount of $50,000 was entered against Dr. C. C. Elliott, a Capetown surgeon, for amputation of the penis without the consent of the patient or, alternatively, for performing an unnecessary operation. The plaintiff, aged 50, was admitted to the New Somerset Hospital, Capetown, suffering from gangrenous ulcer of the penis. After a careful examination by the defendant, who is visiting surgeon to the hospital, and by Prof. G. B. Bartlett of the University of Capetown, who is pathologist to the hospital, it was decided that the patient was suffering from cancer, and that to save his life the penis should be amputated. This was done, but the plaintiff stated that he consented to operation only under the idea that a circumcision was to be performed. He saw a report in which Professor Bartlett recommended that the growth should be treated as "malignant," but he did not know what this meant. Some medical evidence was given for the plaintiff throwing doubt on the diagnosis of cancer and suggesting that, in any case, radium or the roentgen ray should have been tried before proceeding to amputation.

Dr. Elliott stated that he had had a good many similar cases, and had given this one much thought and research, looking up authorities. In his opinion, roentgen-ray or radium treatment would have been not only inefficient but dangerous. It was the duty of the house surgeon to obtain the consent of the patient, and he assumed that this had been done. The only responsibility he took was with regard to the operation. He took none with regard to obtaining consent, which was an administrative matter. The house surgeon explained that, as the patient was transferred from one ward to another in preparation for operation, he unfortunately assumed that the patient's consent had been obtained.

Prof. C. F. M. Saint of Capetown University gave evidence that, on Professor Bartlett's report, amputation was the proper treatment. Since this case the hospital has adopted a printed form which must in all cases be signed by a patient, giving consent before an operation. In summing up, the judge said that a man did not waive control over his body by going into a hospital, and that consent for operations should always be obtained, as admitted by the defense. In this case, by an oversight it was not obtained, and the question arose, Who was responsible? It was clear that no moral responsibility attached to Dr. Elliott, who was justified in assuming that consent had been obtained. But that did not affect the legal position, for if an assault had been committed, it did not matter whose duty it was to ask for consent condoning that assault, everybody concerned being equally liable. When it came to damages, the jury would have to consider, first, whether the patient was suffering from cancer; next; Was the operation necessary to save life? If these two questions were answered in the affirmative, the jury would have to consider whether the patient had suffered any damage at all. The jury by a majority of 6 to 3 gave a verdict for the defendant, for whom judgment was given, with costs. It should be noted that the surgeon's plea that he was not responsible for obtaining the consent of the patient failed, and that he escaped damages simply because the jury found that the plaintiff had suffered none. The moral for operators is obvious.

Arsenic in Cocoa

Arsenic occurs as an impurity in so many chemicals, and chemicals enter so much into present-day methods of food preparation, that from time to time the country is startled by the discovery that this deadly poison has been found in some common article of diet. It may be remembered that some years ago an epidemic of arsenical poisoning occurred in the north of England owing to contamination of beer with arsenic. One of the large cocoa manufacturers in this country has been summoned under the Sale of Foods and Drugs Act for selling cocoa adulterated with arsenous oxid to the extent of one-tenth grain per pound. The analyst for the prosecution said that this was a dangerous proportion. A royal commission had suggested one one-hundredth grain as the limit that should be allowed, and he and other analysts worked according to that. For the defense, it was submitted that even if a man consumed in the day five cups made with this cocoa, he would take into his system only one one-hundredth grain. Asked if he suggested that this would be harmful, the analyst replied that if a man took it for three weeks it would not necessarily be harmful, but that was getting on the line where it might be. The cocoa firm employed eighteen qualified chemists to analyze every article coming into the factory, and forty articles were tested for arsenic. Last July some of the cocoa supplied was found to contain faint traces of arsenic. The chemists were put on double shifts, working night and day. Everything in the place was analyzed, and at last it was found that the impurity was in potassium carbonate, which had been used for years in small quantities to make the cocoa more soluble and more digestible. It was bought from one of the best firms in the trade, which had been unable to explain its presence.

The firm instantly sacrificed the whole of the cocoa affected, 350 tons. It had succeeded in getting supplies of the alkali absolutely free from arsenic. It had instituted a new test, and was able to say that from August 1 every ounce of cocoa from its works was free from impurity. The manufacturers considered whether it was possible to get back the cocoa they had sent out to the trade, but decided that it was not, because they had 65,000 customers, many of them wholesalers. Chocolates did not come into the question at all, because they were made from cocoa which did not contain potassium carbonate. Sir William Wilcox, medical adviser to the Home Office, stated that this was the first case he had heard of in which arsenic had got into food through potassium carbonate. A fine of $100, with $260 costs, was imposed.

The Birth Rate

At the Royal Statistical Society, Mr. T. T. S. de Jastrzebski recently read a paper on "Changes in the Birth Rate and in Legitimate Fertility in London Boroughs, 1911 and 1921." In the nine months following the census of 1921 there was a fall of 9.4 per cent. from the same period of 1911, although the proportion of married women under 45 years of age in the population should have given an increase of 1.7 per cent. The decline in infant mortality, however, reduced the fall in the effective birth rate—i. e., the rate obtained by deducting the deaths under 1 year of age from the births—to 4.2 per cent. Legitimate fertility showed a decline of 12.8 per cent., or when standardized for variation in the ages of the married women under 45, of 11.7 per cent. The gap between the boroughs with better economic conditions and those with a poorer population had diminished sensibly. Notwithstanding the fall in both the birth rate and in legitimate fertility, the natural increase by excess of births over deaths

in 1921 was 390,335 as against 354,328 in 1911, and this gain was at the first period of life. There was no reason to consider an infant mortality of between 50 and 60 for each thousand births as beyond the scope of our legitimate expectations. In the view of the speaker, the reproductive forces at work in the nation are greater than the destructive, and the problem of the immediate future is one of overpopulation rather than of underpopulation.

The Causes of Accidents

The Medical Research Council has issued two reports of the Industrial Fatigue Research Board on the causation of industrial accidents. Fatigue is held to be an important contributory cause, as are also psychic influences, such as altertness and attention. Another factor is inexperience, which generally means youth. But, besides inexperience, there are certain qualities of youth, such as bravado and failure to realize danger, which tend to disappear with age. Alcohol also plays a part. Inadequate or unsuitable lighting are important, and, similarly, the temperature of the worker's environment seems to have a considerable influence.

PARIS

(From Our Regular Correspondent)

Dec. 22, 1922.

International Intellectual Cooperation and the League of Nations

In previous letters I have referred to the origin, membership and plans of the commission on international intellectual cooperation, which was appointed by the League of Nations (THE JOURNAL, June 10, 1922, p. 1828; July 29, 1922, p. 492, and Sept. 2, 1922, p. 836). Three committees appointed by the commission are holding a session in Paris at present; namely, the committee on bibliography, the committee on matters pertaining to universities, and the committee delegated to study into the question of intellectual ownership.

The committee on bibliography is engaged in the coordination of bibliographic enterprises undertaken in the various countries, with a view to avoiding duplication of effort and assuring to scientists and investigators the advantages of a complete bibliography easily accessible. The committee on university matters is dealing with various questions relative to the organization of the international congress of universities. The committee, however, recognizes the fact that political conditions will not permit the convening of such a congress at present. But it is possible to take up at once an extended inquiry into the best means of bringing about a cooperation between the universities. Opportunity is offered also for the discussion of kindred questions, such as the publication of an annual catalogue containing a list of all the courses given in the universities of the world, and the creation of a bureau of information pertaining to universities.

The committee on intellectual ownership is studying more particularly the question of the extension of authors' rights in the field of science, so as to secure to the individual scientist and the field of science represented by his country a more adequate participation in the benefits arising from the utilization of his discovery. At present the system of patents protects only the inventor of the industrial application of a scientific discovery. The mathematician, the physician, the chemist and the biologist, whose scientific discoveries made possible the invention, derive no benefit either for themselves or for their laboratories from the utilization of their works. At the instance of the chairman, M. Bergson, the committee delegated M. Ruffini, professor in the University of Turin, to draw up a plan which, subject to the approval of the commission on intellectual cooperation and the council of the League of Nations, might be used to establish the juridical principles for international protection of scientific discoveries. Such a plan might serve later as the basis for drafts of laws which, with the necessary modifications, might be presented to the parliaments of the various countries. With this object in view, M. de Torrès y Quevedo of Madrid was designated to study the possibilities of applying, in a practical way, the juridical principles and the suggestions for legislation contained in the document to be drawn up by Ruffini.

Pasteur as an Artist

The son-in-law of Pasteur, M. René Vallery-Radot, has published a book that presents a side of Pasteur's character that is but little known. Before he became the great scientist whose centenary the entire world is about to celebrate, Pasteur was known for his drawings in black and white and his pastel work. Between the ages of 15 and 20 (from 1836 to 1842), Pasteur had drawn the portraits of all the notables of his home town, Arbois, department of Jura. These portraits reveal the fact that, young though he was, he already possessed remarkable ability as an observer and artist.

Aid for Scientific Research

M. Paul Appell, rector of the University of Paris, has just received from Madame Hélène-Edouard Nathan two sums of 100,000 francs each. The first is to be used for the laboratories and for scientific research, half in accordance with recommendations of the Comité national d'aide à la recherche scientifique, and the other half is to be employed to meet urgent scientific needs. The second sum of 100,000 francs will be utilized for honor loans to worthy students. These loans, to the number of twenty of 5,000 francs each, will be made in the name of Madame Hélène-Edouard Nathan, and will be granted in response to requests made to the scholarship committee of the Société des amis de l'université de Paris. Applicants for these loans may be either Frenchmen or foreigners, but they must be enrolled in one of the five faculties of the University of Paris.

The Place of Physical Training and Athletics in the Schools

The consulting committee on physical training and athletics in the schools has just approved a preliminary draft of a budget pertaining to the detailed and rational organization of physical education in the schools of various grades. This budget provides for the creation, at the Faculté de médecine, of a course of instruction in physiology as applied to physical education, with a view to preparing physicians for the duties that devolve upon them in connection with physical education. The number of special instructors in physical training in the secondary and technical schools and in colleges will be increased. In the elementary schools, the regular teachers will give the physical training needed, and will assign to it the same importance as to intellectual training. Provision is also made for appropriate special instruction to be given pupil-teachers.

Aid for Students

The Association pour l'extension des études pastoriennes, founded two years ago, has endeavored to ameliorate, at least in some degree, the trying situation of university students, for whom the high cost of living makes it very difficult to continue their studies. The funds collected by this society enable young investigators to devote their time to research work in the Pasteur institutes and the biologic laboratories of France and its colonies. The scholarships that are accorded, on the recommendation of a committee of eight members presided over by Dr. Roux, director of the Pasteur Institute, amount ordinarily to 24,000 francs, and cover two years of study. Fifteen such scholarships have already been granted. The association, in order to be in a

position to continue its work, has issued an appeal for funds, calling more particularly on those who, in the past, have themselves been indebted in any way to the Pasteur institutes.

Aid for War Injured

The Union des colonies étrangères, a society formed by the foreign colonies of France in aid of the victims of the war, recently held its general meeting under the chairmanship of Mr. Walter Berry (president of the American chamber of commerce), who is the president of the administrative council. M. Joseph Asscher, general secretary, read his report showing the work accomplished by the society. More than six million francs have been expended in France, and 8,235 disabled or injured men have been given in schools the supplementary training they needed. Mr. Berry announced that he was about to return to the United States, and that he hoped to come back with large gifts with which to carry on the work of the society.

Distinctions Accorded to Dr. Vaillant

Besides the gold medal accorded to Professor Bergonié of Bordeaux, the Carnegie Hero Fund has granted the same distinction to Dr. Vaillant, another victim of roentgen rays. Vaillant received also an allocation of 50,000 francs.

Election of Officers of the Academy of Medicine

As Dr. Chauffard, professor of clinical medicine at the Faculté de médecine, who has been the vice president of the Academy of Medicine, has become the president for the year 1923, in accordance with the constitution, the academy has elected Dr. J. A. Doléris vice president. Dr. Doléris, is an honorary obstetrician to the hospitals of Paris, and has been a member of the Academy of Medicine since 1905. The academy also elected by acclamation Dr. Souques as annual secretary, and Professors Pouchet and Schwartz as members of the administrative council.

Death of Dr. Jules Chambrelent

Dr. Jules Chambrelent, formerly assistant professor at the Faculté de médecine of Bordeaux, has died at the age of 68. He was born in 1854 and studied medicine in Bordeaux. In 1889 he became instructor in clinical obstetrics at the Ecole de médecine of Toulouse. In 1892 he became assistant professor at the Faculté de médecine of Bordeaux. Chambrelent has studied especially the subjects of stillbirth and infant mortality, and in 1917 he gave a course in child welfare. He was also a collaborating editor of the Traité de l'art des accouchements published by Bar, Brindeau and Chambrelent. In 1917 the Academy of Medicine accorded him the Tarnier prize for the value of his works as a whole. During recent years he had been the director of the Maison Maternelle Nationale at St. Maurice, near Paris.

BELGIUM

(From Our Regular Correspondent)

Dec. 27, 1922.

Prison Reform

In a previous letter, I referred to various hygienic reforms in the Belgian penitentiary system. As a result of statistics published by the anthropologic service, which was established in 1907, the minister of justice has been prevailed upon to consider the immediate creation at Merxplas of a sanatorium for the tuberculous, a hospital for patients with venereal disease, and a home for epileptics. It is certainly the only logical course to take advantage of the time spent by a prisoner in a penitentiary to give him good medical care and improve his health in every way possible. The bacteria carrier who is not sterilized in prison will later resume his place in society. If he is returned to society in the same condition in which he arrived (or possibly in a worse state, for his contagiousness may have increased), he will be the cause of the spread of disease in the family and in the workshop. By giving to prisoners renewed health and strength, we are affording them the means of surmounting the difficulties that they will experience in earning their living, and we shall thus increase the chances of permanent reformation. When it is a question of tuberculosis or syphilis, the two diseases that are encountered at every turn in our prisons, the reasons cited have especial value.

Celebration in Honor of Eugène Lust

The Ecole centrale de puériculture held recently a celebration in honor of Dr. Eugène Lust, who founded in 1897 the first consultation center for infant welfare. It was due to his influence that such centers were established in all parts of the country. He was the founder of the Ligue nationale belge pour la protection de l'enfance du premier âge, the Ecole de puériculture and the Commission permanente du lait. He was also the general secretary of the Union internationale.

Diverticula of the Bladder

In discussing diverticula of the bladder before the Société belge d'urologie, Dr. François emphasized recently the great value of cystoroentgenography in the establishment of a diagnosis. Cystoroentgenography is accomplished by the injection into the bladder of from 100 to 150 c.c of a 30 per cent. solution of sodium iodid, after which a roentgenogram is taken. The patient is then allowed to urinate, whereupon a second plate is made. As regards surgical intervention, this should not be decided on unless the trouble is very marked.

BUDAPEST

(From Our Regular Correspondent)

Dec. 15, 1922.

Epidemic Diseases in Hungary

Some interesting facts concerning the statistics of epidemic diseases in Hungary have been brought to light by a recent book, based on the figures published by the commission of the Hungarian Bureau of Statistics.

PREVALENCE

The author points out that, ever since the year 1874, the death rate from epidemic diseases in Hungary has shown a steady decrease, except in the case of scarlet fever, which has remained almost stationary since 1876. Smallpox, typhus exanthematus and cholera, on the other hand, at present appear only sporadically, and are usually suppressed at once; moreover, these diseases are invariably imported into Budapest, the infection being traced in every case to some source outside the city.

Typhoid, on the whole, has been less frequent in Hungary since the improvement of the sewerage system and waterworks. During the last two years, however, there has been an increase in the number of cases of typhoid in Budapest, and since the source of infection can hardly be in the city itself, every effort is made to obtain the history of each fresh case so that measures can be taken to check the evil at the fountain head. Scarlet fever has also been more or less endemic in Budapest for several decades. In a table showing the scarlet fever statistics for the last three years in forty-six European cities, Budapest ranks successively as the forty-first, forty-second and forty-third, the only towns occupying a lower place on the list being Bucharest, Lemberg, Odessa, Petrograd and Warsaw.

CAUSES

The reason for these alarming figures is to be found in the terrible poverty prevailing in the lower quarters of

Budapest, and in the ignorance and indifference that too often accompany it. From 85 to 90 per cent. of the deaths from scarlet fever in that city occur among the poorer classes, and are in great part due to the insanitary conditions in which they live and the overcrowding of their houses. The common practice of receiving a number of lodgers night after night in one room is a potent factor in the spread of disease, as well as an obstacle to the isolation of the patient.

REMEDIES

Any material improvement in the condition of the poorer classes in Budapest, therefore, would do much to eliminate scarlet fever, or at least would help to solve a problem which threatens to become a very pressing one. In the meantime the only effectual means of checking the spread of infection is strict isolation; hence it is of the utmost importance that every case of scarlet fever be reported at once to the proper authorities. The recent statistical returns prove beyond all doubt that more than half the cases are never registered, and in the poorer quarters of the city the mortality is extremely high.

The only remedy for this abuse would be to open a special "epidemic bureau," directed by energetic and reliable physicians, having under them a staff of men whose duty it would be to find out and report every case of scarlet fever in the city. The physicians, besides visiting the various patients, would be required to supervise removal to the fever hospital and disinfection of houses, etc.; while not the least important part of their duties would be the discovery of the source of the epidemic. The work of an organization of this kind could be greatly facilitated by systematic medical supervision of schoolchildren, such as is now carried out in England and Germany.

With regard to the isolation of scarlet fever patients, there is no doubt that the question is often complicated by the fact that it is not always easy to diagnose the disease in its early stages, particularly when there is little or no rash. Much of this difficulty might be overcome if the medical course included six months' attendance at a fever hospital. It is very important that club physicians, above all, should be capable of recognizing the earliest signs of scarlet fever, since their examination of patients must of necessity be very rapid, and the symptoms of incipient disease might be easily overlooked by one who was not an expert in diagnosis. Competent club physicians are particularly necessary in Budapest, where, out of a population of 1,000,000, more than 300,000 persons are members of sick clubs. But a correct diagnosis, important as it is, is not everything, and, after the physician has notified the case, he often has considerable difficulty in isolating the patient.

A card of warning on the front door may keep away visitors; but the different members of the household will probably continue to go to their offices or workshops, and to travel in public conveyances, thus scattering infection broadcast. The poor, who regard the doctrine of infection and disinfection as a superstition of the rich, resent having their bedding taken to the dispensary for fumigation, and evade the law by hiding it in the house of a neighbor, who probably falls a victim of his own generosity, and in his turn helps to spread the disease in a similar manner.

FEVER HOSPITALS

There can be no doubt that, except when the patient and his nurse can be completely isolated from the rest of the family, and the physician can rely on the intelligent cooperation of the entire household, the proper place for a patient with scarlet fever is the fever hospital. This fact has at last been recognized by the state, and a number of fever hospitals for the accommodation of patients during an epidemic will shortly be erected; while every effort will be made to overcome popular prejudice against such institutions by most careful attention to the comfort and well-being of their inmates. One cause for the dislike of hospitals entertained by the general public is the fear of infection from other patients.

That this fear is not wholly groundless has been proved by a Budapest practitioner, Dr. Preisich, who stated, in an article, that during the year 1912 as many as 137 persons suffering from scarlet fever contracted other diseases, such as measles, diphtheria and varicella, and in some cases more than one; while eighty-one patients having diphtheria and varicella contracted scarlet fever. This danger, of course, can be avoided by building special hospitals for every form of contagious disease.

SOURCES OF INFECTION

At present, the chief source of infection is the provinces, where, owing to defective hygiene, sporadic cases of scarlet fever are constantly occurring, and may easily become the precursors of a formidable epidemic throughout the country. The utmost vigilance, therefore, should be maintained in country districts, and every precaution should be taken to prevent the infection being carried into towns. The same care should be observed with regard to diphtheria, which is as much a menace to public health as scarlet fever, though, thanks to the modern treatment of this disease by serums, the mortality is now considerably less.

BERLIN

(From Our Regular Correspondent)

Dec. 16, 1922.

Vital Statistics of the Large Cities of Germany for the Third Quarter of 1922

As compared with the second quarter, the number of living births in the large cities of Germany for the third quarter of 1922 showed a considerable diminution, the total having fallen from 75,726 to 67,512, which signifies, on an annual basis, a decrease from 18.5 to 16.4 for each thousand of population. This marked decline in the birth rate, it is thought by some, may be regarded as the reflection of the effect of the first sharp advance in the prices of commodities during the last quarter of 1921; for the duration of the decline, extending over several weeks, as well as its intensity, corresponded to the terrific advance of the American dollar (as determined by the number of marks required to purchase one dollar) during the corresponding months of conception; namely, October and November, 1921. On the other hand, the mortality for the third quarter, 1922, although, during this period, the sharpest advance in prices took place that the country has experienced thus far, decreased to such an extent that the death rate per thousand of population (10.1) went below the death rate for the third quarter of 1921 (10.4), which was the lowest heretofore recorded. We are, therefore, face to face with the paradoxic fact that the death rate sinks as the prices soar. This phenomenon admits of only one explanation; namely, that at present what is taking place is not so much an advance in prices, in the true sense of the term, as it is a progressive depreciation of money values, to which we may ascribe an influence on the trend of the birth rate, but which exerts no effect on mortality conditions, so long as the masses are able to adapt the economic conditions to the money depreciation. One favorable factor affecting the death rate was the advantageous character of the weather during the summer of 1922, to which the absence of the summer peak of infant mortality and of acute and infectious diseases of the digestive organs may be ascribed. Also with reference to other infectious diseases,

the oft made observation that cool and rainy summers keep down epidemics was again confirmed. However, the marked decline in the death rate for the third quarter of 1922 as compared with the rate for the preceding quarter is due mainly to the great decrease in the mortality from pneumonia and tuberculosis. The pneumonia death rate dropped from 1.46 to 0.72 per thousand of population, and the tuberculosis rate fell from 1.80 to 1.31. During the third quarter of 1921, the death rate from tuberculosis, 1.22, was only 0.09 less than in the third quarter of 1922.

Progress in Roentgenography

The ordinary photographic plate is sensitized mainly to blue and violet light. Therefore, in the corresponding photograph the dark blue sky will look white, while a yellowish red flame will appear almost black. Only with the discovery of the monochromatic plate did it become possible to make photographs that reproduce for the eye the various colors in their lights and shades. Such plates are spoken of as being sensitized to red, yellow or green rays. There are also different kinds of roentgen rays, which are distinguished by their respective wave lengths; but heretofore there has been no method known by which the photographic plates used in roentgenography may be sensitized to them, in a similar manner. Now, however, Dr. C. Schleussner would seem to have solved the problem by adding a secondarily radioactive substance (*Sekundärstrahler*) to the light-sensitive substance of the roentgenographic film or plate. Such secondary radioactive substances also emit rays when roentgen rays come in contact with them and make the plate extremely sensitive to their action, although not at all sensitive to ordinary light. The result is quite startling. Roentgenograms of bones taken with the sensitized roentgenographic plate bring out all the finer details in the structure of the bones, which otherwise can be observed only in the sawed ends of the bones themselves. By means of this invention, it is hoped that it will be possible to secure information of pathologic changes and of injuries that the ordinary plate entirely fails to record; it brings also the problem of cinematography by means of roentgen rays one step nearer.

Gymnastics for Infants

Detlev Neumann, a former army officer and athletic director at the *Militärturnanstalt*, after many experiments extending over a period of years, has worked out a system by which the muscles of infants may be strengthened by gymnastics and a favorable effect on the whole organism secured. Judging from the practical trials of the system, which were carried out with healthy and sick infants with the aid of Professors Bier and Langstein, the results are said to be very satisfactory. For the gymnastic exercises a table is used that is large enough to allow the child to tumble about on it at will, but not so large but that the assistant can control his movements with the hands. A well padded underlay is the only requisite for the Neumann-Neurode system of gymnastics for infants. After three or four repetitions of the same exercise, the child usually knows what is expected of him. The child must never be allowed to lie on the table without supervision, for the motions may become so exaggerated as to lead to unexpected results. In incipient cases of rickets, exceptionally favorable results have been obtained by the use of this system. It is indicated also for children that learn to walk late and do not make the proper effort, that find it difficult to sit up straight, that have a flabby musculature, and that cannot stand on their feet without assistance. In all such cases, according to a report issued by the Empress Augusta Victoria House, marked improvement was noted in two months, and later a complete cure was effected.

Marriages

ARTHUR WESLEY ANDERSON, Cumberland, Iowa, to Marguerite Lucille Hansen of Grand Rapids, Mich., December 28.

WALTER HAROLD CULLEY, Harrison, Ohio, to Miss Audrey Genevieve Simms of Moundsville, W. Va., December 3.

FRANK W. SHELTON to Miss Bess F. Crosson, both of Independence, Iowa, at Kansas City, Mo., December 9.

CHARLES SUMNER LEVY, Baltimore, to Miss Ruth Bear of Lonaconing, Md., at Cumberland, December 27.

FREDERICK D. BARKER, Dayton, Ohio, to Miss Mary Wood Roberts of Columbus, November 30.

ARTHUR W. RECORDS, Franklin, Ind., to Miss Edna W. Alfred of Union City, December 21.

EDWIN NASH BROYLES, Atlanta, Ga., to Miss Eleanor Curtis Whiteley of Baltimore, January 6.

FULLER BRYAN BAILEY to Miss Mabelle Carolyn Zimmer, both of Chicago, January 6.

EMMA MAKI WICKSTROM to Mr. Enoch M. Cox, both of Portland, Ore., recently.

Deaths

Guthrie McConnell ✠ Cleveland; University of Pennsylvania School of Medicine, Philadelphia, 1896; member of the American Association of Pathology and Bacteriology and the American Society of Clinical Pathologists; formerly assistant professor of pathology at St. Louis University, St. Louis; professor of pathology, bacteriology and hygiene at Temple University Department of Medicine, Philadelphia; at one time pathologist to the Barnard Free Skin and Cancer and St. Luke's hospitals, St. Louis; formerly assistant pathologist at the Snodgrass Laboratory, St. Louis, and bacteriologist for the Missouri State Board of Health; served in the M. C., U. S. Army, during the World War; aged 47; died, January 5.

Lemuel Grant Baldwin ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1886; formerly president of the New York Obstetrical Society, the Brooklyn Gynecological Society and the Long Island College Alumni Association; member of the Brooklyn Pathological Society; gynecologist to Brooklyn and St. Peter's hospitals and the Hospital of St. Giles the Crippled, Brooklyn; St. Francis' Hospital, Jersey City; St. John's Hospital, Long Island City; St. Joseph's Hospital, Far Rockaway, and the Huntington Hospital, Huntington; aged 59; died, December 31, at the Skene Sanitarium, from cerebral hemorrhage.

George C. Ross ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1891; member of the American Surgical Association, Philadelphia Academy of Surgery, Obstetrical Society of Philadelphia and the Pathological Society of Philadelphia; served in the M. C., U. S. Navy, during the World War, with the rank of commander; aged 56; on the staffs of the Methodist, Germantown and University of Pennsylvania hospitals and the Lankenau Hospital, where he died, December 27.

Alfred Yale Massey, Belleville, Ont., Canada; Trinity Medical College, Toronto, 1898; formerly a medical missionary in Labrador and for several years chief medical officer for the Belgian government in Africa, where he had worked with Dr. Koch; recipient of the honor of Chevalier de l'Ordre Royal du Lion from the king of the Belgians for his work on epidemic encephalitis; for twenty years medical missionary in the Belgian Congo, where he died recently, aged 51.

Edward Addison Craighill, Lynchburg, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1861; member of the Medical Society of Virginia; also a druggist; veteran of the Civil War; formerly president of the Virginia Pharmaceutical Society and at one time president of the city council; aged 82; died, January 2, from senility.

William Peter Strain, Far Rockaway, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1906; member of the New York Academy of Medicine; visiting pediatrician to the Neponsit Beach and St. Joseph's hospitals; aged 38; died, January 5, at the New York City Hospital, from heart disease.

Dorsey Dean Metcalf, Fort Wayne, Ind.; Milwaukee Medical College, Milwaukee, 1911; member of the Indiana State Medical Society; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 40; died, December 30, at the Lutheran Hospital, following an appendectomy.

Homer Brown Haile, Madras, Ore.; University of Oregon Medical School, Portland, 1909; member of the Oregon State Medical Association; veteran of the Spanish-American War; served in the M. C., U. S. Army, during the World War; aged 47; died, December 16, from heart disease.

William H. Morrison, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; Philadelphia Neurological Society, and the Pathological Society of Philadelphia; aged 66; died, December 31.

Curtis Rudolph Estabrook, Brooklyn; Bellevue Hospital Medical College, New York, 1877; for ten years government surgeon at the mines in Mexico, and at one time attached to the hospital on Blackwell's Island; aged 75; died, January 1, from carcinoma of the throat and tongue.

John A. McCafferty, Brooklyn; Fordham University School of Medicine, New York, 1916; member of the Medical Society of the State of New York; formerly registrar of the health department; visiting surgeon to St. Catherine's Hospital; aged 34; died, January 2, from pleurisy.

Charles McHenry Cooper, Chatfield, Minn.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1892; former mayor of Chatfield and at one time member of the board of education; aged 57; died, November 23, following a long illness.

Albert May, Crothersville, Ind.; Medical Department University of Louisville, Ky., 1875; member of the Indiana State Medical Association; aged 76; died, November 9, as the result of a self-inflicted wound, which severed his jugular vein.

William Grimsley Taylor, Greensboro, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1919; member of Medical Society of the State of North Carolina; aged 27; died, December 28, from pneumonia and pleurisy.

Henry Peter Wekesser ✠ Lincoln, Neb.; University of Nebraska College of Medicine, Omaha, 1908; member of the Southern Surgical Association; aged 42; died, December 15, at St. Elizabeth's Hospital, following an appendectomy.

Pyrl H. Gunsaullus, Bronson, Mich.; Detroit College of Medicine, 1894; member of the Michigan State Medical Society; formerly secretary of the school board; aged 62; died, December 27, from pneumonia and heart disease.

L. Theophilus Hill, Abbeville, S. C.; University of Maryland School of Medicine, Baltimore, 1882; member of the South Carolina Medical Association; also a druggist; aged 70; died, December 26, from cerebral hemorrhage.

Edward Blake Oliver, Fort William, Ont., Canada; Trinity Medical College, Toronto, 1898; health officer of Fort William since 1912, and formerly president of the Ontario Health Officers' Association; aged 45; died recently.

Milton Bliem Fretz, Palmyra, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1871; member of the Medical Society of the State of Pennsylvania; also a druggist; died, December 29, from heart disease.

William Howell Batte, Memphis, Tenn.; Memphis Hospital Medical College, 1901; member of the Tennessee State Medical Association; aged 43; died, January 1, at the Gartly-Ramsey Hospital, following an operation.

Oscar Frederick Eastman, Calgary, Alta., Canada; Northwestern University Medical School, Chicago, 1910; aged 47; died, November 5, from injuries sustained when the automobile in which he was driving, overturned.

Isham Randolph Page, Baltimore; New York University Medical College, New York, 1859; member of the Medical and Chirurgical Faculty of Maryland; Civil War veteran; aged 89; died, January 1, from senility.

Ferdinand Edward Peck, Stearns, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1898; member of the Kentucky State Medical Association; aged 46; died, December 21, from pneumonia.

William Walne Wallace, Birmingham, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1921; on the staff of the Hillman Hospital; aged 25; died, December 27, from influenzal pneumonia.

Julia Maltby Dutton, Newton, Mass.; Woman's Medical College of New York Infirmary for Women and Children, 1885; aged 78; died, December 15, from cerebral hemorrhage and ulcer of the stomach.

William Green Hanson ✠ Everett, Mass.; Boston University School of Medicine, Boston, 1878; aged 65; died, December 18, at the Massachusetts Homeopathic Hospital, Boston, from pneumonia.

Ezeckiel Walter Jenkins ✠ Denver; University of Tennessee College of Medicine, Memphis, 1907; aged 41; died, December 26, from injuries received when knocked down by a motor truck.

Martin Luther Malloy ✠ Eutaw, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1899; aged 47; died, December 27, in a Tuscaloosa hospital, as a result of stab wounds.

James Harvey Preston, Nashville, Tenn.; Vanderbilt University Medical Department, Nashville, 1879; member of the Tennessee State Medical Association; aged 67; died, December 26.

Charles L. Erwin, Newport Center, Vt.; University of Vermont College of Medicine, Burlington, 1867; formerly member of the state legislature; aged 78; died, December 26.

Emile E. Simard, Montreal, Que., Canada; Victoria University Medical Department, Toronto, Ont., 1883; aged 64; died recently at the Hospital for Incurables, Westmount.

Collin B. Brown, Edgewood, Texas; University of Tennessee College of Medicine, Memphis, 1800; aged 68; died, December 30, at the Baylor Hospital, Dallas.

Hannah M. Brown Romaine, Los Angeles; Hahnemann Medical College and Hospital of Chicago, 1887; aged 76; died, December 2, from valvular heart disease.

Thomas J. Talbott, Jr. ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 50; died, January 1, from cerebral hemorrhage.

John G. Scott, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, 1879; aged 68; died suddenly, October 29, while on a hunting trip.

James Spencer Mackey, Rogersville, Ala.; University of Tennessee College of Medicine, Memphis, 1907; aged 46; died, December 18, from pneumonia.

Charles Henry Newth ✠ Philomath, Ore.; Ensworth Medical College, St. Joseph, Mo., 1889; aged 65; died, November 29, from acute indigestion.

Harry Asahel Barker, Burlington, Vt.; New York University Medical College, New York, 1883; aged 69; died, December 28, from pneumonia.

George C. Hayes, Williamsport, Ohio; Starling Medical College, Columbus, 1882; aged 69; died, December 30, from cerebral hemorrhage.

George Hardy Finch ✠ Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1898; aged 54; died, December 18.

William J. Holloway, Chappells, S. C.; University of Georgia Medical Department, Augusta, 1868; aged 77; died, December 28.

Arthur Beever Westfall ✠ Lafayette, Ind.; Kentucky School of Medicine, Louisville, 1890; aged 62; died suddenly, December 22.

Julius Gruenewald, Glasgow, Ill.; Missouri Medical College, St. Louis, 1891; aged 65; died, December 30, from pneumonia.

John Seth Farrell, Barnes City, Iowa; State University of Iowa College of Medicine, Iowa City, 1877; aged 71; died in December.

Stephen West, Angus, Ont., Canada; Victoria University Medical Department, Toronto, 1886; aged 60; died, October 30.

Willard A. Haynes, Sabetha, Kan.; New York University Medical College, New York, 1881; aged 70; died, December 29.

Butler W. Cobb, Greenwood, S. C.; University of Georgia Medical Department, Augusta, 1885; aged 70; died, January 2.

Charles A. Perrin, Bozeman, Mont.; Michigan College of Medicine, Detroit, 1881; aged 68; died, December 29.

Andrew B. Ireland, Philadelphia; Jefferson Medical College of Philadelphia, 1885; aged 66; died, December 31.

Matthias Stevens Bowser, Lima, Ohio (licensed, Ohio, 1896); aged 85; died, December 22, from senility.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

NEISSER-SAN-KAHN NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Neisser-San-Kahn is marketed by the York Laboratories, York, Pa., as "a new genito-urinary product" with the claim that, "in Neisser-San-Kahn the genito-urinary surgeon has at his command a new salt of marked value in urethral infections." The product is said to be a definite chemical body, zinc borosalicylate, and to have the composition indicated by the chemical formula "$(C_{14}H_{18}BO_7)2Zn$." The following statement with reference to the method of manufacture was furnished the Council:

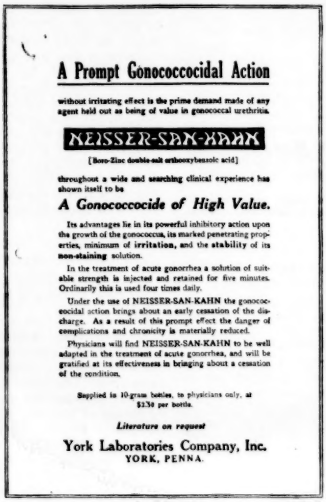
"PREPARATION. Boric-acid being converted into hydrogen Tetraborate $H_2B_4O_7$. With a certain amount of Acid Salicylic and Zincum Carbonatum, (Normal) it forms the body of the product through crystallization. The crystals are recrystallized from hot water to discard the irritating property of the Acidum Salicylicum."

Neisser-San-Kahn is claimed to be "especially adapted for treatment of all forms of Neisserian infection." The preparation is marketed in the form of tablets. A blotter, evidently intended for the druggist, advises:

"In the absence of other instructions from the prescribing physician, Neisser-San-Kahn should be dispensed as follows: 1 tablet (1 gm.) Neisser-San-Kahn in three (3) ounces hot distilled water."

Although Neisser-San-Kahn is said to be a new chemical compound, a preparation claimed to be zinc borosalicylate was introduced about ten years ago (in Germany) with claims similar to those now advanced for Neisser-San-Kahn. This German preparation was called Dr. A. Foelsing's "Mucosan." Mucosan was analyzed at the University of Giessen by K. Feist (*Apotheker Zeitung*, 1912, p. 306). Feist concluded that the product presented a loose chemical combination of zinc salicylate, salicylic acid and boric acid, and that a product having properties identical with those of Mucosan is obtained when a mixture of boric acid 2.11 gm., zinc salicylate (hydrated) 5.63 gm. and salicylic acid 2.86 gm. is dissolved in a little water and the solution evaporated to dryness.

As evidence for the therapeutic value of Neisser-San-Kahn the York Laboratories submitted letters from physicians who had used the preparation. These did not indicate that the preparation has any other action in urethritis than that of zinc sulphate. Zinc sulphate is indicated only in certain forms of urethritis and the submitted evidence presented no warrant for the general use of the preparation advocated by the firm which markets it. The market is crowded with preparations proposed for the treatment of urethritis and the combination presented in Neisser-San-Kahn appears to have no advantage over established drugs.



A Prompt Gonococcocidal Action

without irritating effect is the prime demand made of any agent held out as being of value in gonococcal urethritis.

NEISSER-SAN-KAHN

[Boro-Zinc double-salt orthooxybenzoic acid]

throughout a wide and searching clinical experience has shown itself to be

A Gonococcocide of High Value.

Its advantages lie in its powerful inhibitory action upon the growth of the gonococcus, its marked penetrating properties, minimum of **irritation**, and the **stability** of its **non-staining** solution.

In the treatment of acute gonorrhea a solution of suitable strength is injected and retained for five minutes. Ordinarily this is used four times daily.

Under the use of **NEISSER-SAN-KAHN** the gonococcocidal action brings about an early cessation of the discharge. As a result of this prompt effect the danger of complications and chronicity is materially reduced.

Physicians will find **NEISSER-SAN-KAHN** to be well adapted in the treatment of acute gonorrhea, and will be gratified at its effectiveness in bringing about a cessation of the condition.

Supplied in 10-gram bottles, to physicians only, at $2.50 per bottle.

Literature on request

York Laboratories Company, Inc.
YORK, PENNA.

A specimen of recent (December, 1922) "Neisser-San-Kahn" advertising. In the original this occupied a full page.

The Council declared Neisser-San-Kahn inadmissible to New and Nonofficial Remedies on the following grounds:

1. It is an unoriginal preparation marketed under a proprietary, nondescriptive name. The rules of the Council provide that a proprietary name for a medicinal article shall be recognized only when the use of such an exclusive name is in the interest of the public welfare. In consideration of the benefits which may come from the discovery of a therapeutic agent the Council concedes to the person or firm which, by right of discovery, controls such a product the right to name it and offers no opposition to an arbitrary name for such a product. The combination presented by Neisser-San-Kahn and claimed to be zinc borosalicylate, however, is not the discovery of the York Laboratories and hence the Council cannot recognize the proprietary and nondescriptive name of this firm.

2. The therapeutic claims are not substantiated by acceptable evidence and are, therefore, unwarranted.

3. The available evidence fails to show that the preparation, claimed to be zinc borosalicylate, has any advantage over established zinc salts. The use of substances which are unessential modifications of established drugs is unscientific and serves no useful purpose and hence, in the absence of evidence of superiority over established zinc salts the use of this so-called zinc borosalicylate is not in the interest of rational therapy.

Correspondence

SUPPLIES FOR LEPER STATIONS

To the Editor:—I have been impressed with the very encouraging work for the cure of leprosy which is being done in the two leper stations under my care—Kwangju and Fusan, Korea. I am in the United States this year for my regular year of absence. While in this country I am anxious to extend to as many people as possible an opportunity to help in this splendid service for humanity.

Naturally, my mind goes out to my colleagues in the medical profession as the ones who will best understand the scope and importance of the work from a physical standpoint, and I feel that if they knew of some of our pressing needs, many of them would be glad to cooperate in supplying these.

I have made a list of some of the apparatus and supplies of which we stand in need: two microscopes; surgical instruments of all kinds; drugs; dressings and all kinds of hospital supplies, and medical books.

We can use any of these things second hand. Some hospitals in America burn many articles in the way of bandages and dressings that could be resterilized and would be useful to us.

I shall be pleased to answer any questions or to furnish additional information in regard to this important work and its needs if addressed at my American home, Columbus, Ark., until September, 1923.

R. M. WILSON, M.D., Kwangju, Korea.
Medical Missionary.

DETECTING LEAKS IN BASAL METABOLISM APPARATUS

To the Editor:—In a communication in THE JOURNAL, Nov. 25, 1922, p. 1858, Dr. Lynch of Dallas advocates the use of coal gas and a flame for the detection of leaks in the Benedict form of basal metabolism apparatus. We regard such a procedure as dangerous, involving, as it does, the possibility of an explosive mixture of gas and air being formed in the tubes and chamber of the apparatus. The use of coal gas is open to objection on other grounds, namely, that certain constituents of the gas are soluble in rubber, and rubber tubing so contaminated may continue to give off unpleasant odors for some time even after a thorough ventilation of the apparatus. Such odors may impair the accuracy of a basal metabolism determination by nauseating the patient under examination.

The method of painting soap-suds over the sites of suspected leaks while applying pressure to the top of the spirometer bell, has proved quite satisfactory in our hands, and is recommended for the detection of leaks in Benedict's or any similar apparatus.

H. F. PIERCE, New York.
Associate in Physiology, Columbia University College of Physicians and Surgeons.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SOLUTION OF HYPOPHYSIS ADMINISTERED AFTER CESAREAN SECTION IN PREVIOUS LABOR

To the Editor:—Would there be any risk in giving pituitary extract, if indicated, during labor, the patient having had previously a cesarean section for a transient cause?

H. S. GEIGER, M.D., Kissimee, Fla.

ANSWER.—The query contains two parts: 1. May certain pregnant women after cesarean section be managed expectantly at the termination of subsequent pregnancies? 2. May pituitary extract be used as a uterine stimulant in labor, with especial reference to its effects on a uterus previously subjected to cesarean section?

1. During the last decade the indications for cesarean section have been so broadened that many operations have been performed for adventitious circumstances, some of which are manifestly spurious. Of "transient" causes there stand out preeminently placenta praevia, eclampsia, malpositions, and ovarian tumors offering insuperable obstruction to labor. In subsequent pregnancies and labors, their recurrence is hardly probable; therefore, the women so affected would be in no jeopardy from the indications that had presented themselves in the previous labors. These are in sharp contrast to those women who had contraction of the pelvis, and required sections, for the primary indication is permanent. However, cesarean section for transient indications presents an aspect which demands most serious consideration, not only in placing the indication for the section, but also in dictating the policy in the delivery of the baby at the termination of all subsequent pregnancies. The relation of the cesarean scar to later labors is still an unsettled problem, for many assert that a cesarean once is a cesarean always, while others hold that such women may have a labor conducted under watchful expectancy. The preponderance of evidence is pointing toward the first stated aphorism. The cesarean scar is essentially an indication for the repetition of the operation because of the danger of rupture of the scar. If an exception does exist, the following conditions should probably be fulfilled: a multiparous woman with the history of an easy spontaneous birth or births, with a normal pelvis, normal presentation and position, in an approved surgical hospital where watchfulness may be scrupulously observed, and immediate laparotomy be performed if necessity arises. In all others the cesarean section should be performed before labor sets in. The danger of uterine rupture, with death of the fetus, and high maternal mortality, is acute. In the *American Journal of Obstetrics and Gynecology* (**4**:579 [Dec.] 1922) figures were quoted to show that of 200 repeated sections, thirty-eight uteri either ruptured or had attenuated scars which would have ruptured under the stress of hard labor. Holland (*Brit. M. J.* **2**:519 [Oct. 1] 1921) showed that the danger of rupture in subsequent spontaneous labor was fully 25 per cent. Therefore, the physician who contemplates conducting a woman through a spontaneous labor expectantly should weigh the evidence with the greatest circumspection.

2. Pituitary extract is an extremely potent drug. The potency of the products of different manufacturers may vary enormously, just as the product of one manufacturer may vary at different times. The potency of the products issued by different pharmaceutical houses, tested by the U. S. Public Health Service, varied as much as from 1 to 8. The highly active drug may be extremely dangerous when administered to a parturient woman in the presence of a malposition or other interference to labor. The accumulating evidence of ruptured uteri after administration of pituitary extract is worthy of mention. In normal labor, pituitary extract should be given only in fractional doses, 2 or 3 minims, repeated in twenty or thirty minutes, when the only delay to the progress of labor is due to beginning secondary inertia—when the os is fully dilated, the membranes are ruptured, rotation is completed, and the outlet is sufficiently relaxed to permit the easy birth of the child. Facilities for a prompt forceps operation should be available in the event that this small dosage produces untoward effects. Pituitary extract never should be given in the presence of a suspected, let alone a known, cause for dystocia. As pituitary extract may cause rupture of an intact uterus, it is absolutely contraindicated in the case of a uterus damaged by a cesarean scar until after the child and placenta have been delivered.

TREATMENT OF LUPUS

To the Editor:—Kindly inform me through Queries and Minor Notes of the latest treatment of lupus. Please let me know the technic.

————, Massachusetts.

ANSWER.—The treatment of lupus vulgaris in general is unsatisfactory, and many methods have been advised. For methods recently proposed the evidence is not particularly promising. The latest actual addition to our means of treatment is, perhaps, the use of ultraviolet light, now carried out by means of mercury vapor lamps made of quartz and known as quartz lights. The affected areas are exposed to this light under pressure. The exposures are carried out to the point of producing acute inflammatory reactions. The method is one depending for its success on the experience of the physician in treating lesions of this character. The lights and their methods of use are described in the various textbooks on electricity and light therapy.

EXCESSIVE PERSPIRATION OF HANDS AND FEET

To the Editor:—A young man is troubled since childhood and especially after adolescence with excessive perspiration of hands and feet, when moderately warm or when slightly nervous, e. g., during quizzes and examinations. His mother had the same trouble. Is it hereditary? What are the possible causes? How can this condition be effectively alleviated or cured? Please omit my name.

————, M.D., Michigan.

ANSWER.—Excessive perspiration of the hands and feet and excessive perspiration occurring elsewhere is a symptom of excessive irritability of the nervous system. This may be of neuropathic origin or it may be due to chemical or endocrine causes, e. g., hyperthyroidism. As a neuropathic or an endocrinopathic tendency seems to be transmissible in families, such symptoms may also be hereditary. The cure of the condition would necessitate discovery of the cause, in the first place, and its appropriate treatment. Thus, neurasthenia would require a mental and physical hygiene suitable to the individual. Hyperthyroidism—discoverable by some of the other symptoms of this condition, most especially

an increase in basal metabolism—might be benefited by thyroid and thymus roentgenotherapy, in addition to proper hygiene.

As symptomatic treatment, an astringent might be used, e. g., a 25 per cent. solution of aluminum chlorid, as recommended by A. W. Stillians (THE JOURNAL, Dec. 30, 1916, p. 2015). It is dabbed on gently and allowed to dry; the application is repeated every second or third day for three applications, and then once a week to prevent recurrences. A 0.5 per cent. solution of atropin sulphate, a few drops of which were rubbed in the hands, just before hand-shaking, has given comfort to a traveling salesman who was annoyed by finding his hands suddenly wet on such occasions. Should all these things prove unsatisfactory, a skilfully directed course of roentgenotherapy may put an end to the trouble.

DENTAL CARIES AS A SOURCE OF FOCAL INFECTION

To the Editor:—I would much appreciate information on the subject of dental caries not involving the pulp, as a source of focal infection. It is understood, of course, that dental caries at any stage is a potential source of future focal infection, and that dental repair is highly important. The specific question on which I desire information is, whether there is any present tangible evidence tending to prove that dental caries not involving the pulp is actually a source of focal infection for such diseases as neuritis, arthritis, myalgia, myocarditis and valvular heart disease.

W. W. ANDERSON, M.D., Cincinnati.

ANSWER.—There is no evidence that cavities in the teeth which do not involve the pulp ever act as a focus for the dissemination of bacteria through the blood and lymph streams. Neuritis, arthritis, myalgia, myocarditis and valvular diseases of the heart are not due to a focus in a simple cavity of decay in a tooth, nor are any other diseases.

Miller, in "Micro-Organisms of the Human Mouth," says that while the diameter of the dentinal tubules is sufficient to admit bacteria of the mouth, the great mass of bacteria in cavities of decay do not penetrate even up to the normal dentin, much less into it. Black and others have verified Miller's findings.

The organism that penetrates farthest in the dentinal tubules is the lactic acid bacillus. When this acid-forming fungus dissolves the lime, first in the enamel, and then in the dentin, sufficiently to expose the pulp, opportunity is offered for pathogenic organisms to enter the pulp, which they destroy; then opportunity is offered for the organisms to reach the apex of the tooth, from which point they are disseminated to all parts of the body through the blood stream.

DEFINITION OF MAJOR OPERATION

To the Editor:—Please publish what operations in surgery are major and what minor.

H. A. BISHOP, M.D., Millington, Mich.

ANSWER.—In THE JOURNAL, Oct. 21, 1916, was published the following definition of the term "major surgical operation," as defined and issued by the workmen's compensation board of Pennsylvania, in interpreting the term as applied to cases under the compensation law of that state:

> A major operation is a surgical procedure which entails immediate serious consequences to the patient and which requires skill and training to perform, and includes: 1. The setting of fractures of long bones and reducing of subluxations, providing accuracy and efficiency of reduction be demonstrated by roentgen ray taken before and after surgical treatment. 2. All operative procedures, other than finger and toe amputations, cleansing, draining and closing wounds, evacuating pus by incisions, the manipulating and reduction of uncomplicated dislocations, the treatment of uncomplicated fractured ribs, the removal of superficial foreign bodies from the eyes, and the removal of subcutaneous foreign bodies.

Census of Deaf and Dumb.—The Department of Commerce announces that 44,885 deaf and dumb persons, or deaf-mutes, were enumerated in the census of 1920. In 1910 the number was 44,708. The deaf-mute population was only 425 per million in 1920, as compared to 486 per million in 1910. There was one deaf-mute for every 2,359 people in 1920, as against one for every 2,060 in 1910. The relative decrease in the prevalence of deaf-mutism during the last ten years is due, in part, according to this report, "to more skilled treatment of certain diseases, especially those of children, which frequently cause deafness."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 6. Sec., Dr. Harry C. De Vighne, Juneau.
KANSAS: Topeka, Feb. 13. Sec., Dr. Albert S. Ross, Sabetha.
NATIONAL BOARD OF MEDICAL EXAMINERS: Written examination in Class A medical schools, Part I and II, February 12-14 and February 15-16. Sec., Dr. John S. Rodman, 1310 Medical Arts Bldg., Philadelphia. Application for the February examination must be sent in by January 1.
NEW HAMPSHIRE: Concord, March 9-10. Sec., Dr. Charles Duncan, Concord.
PENNSYLVANIA: Philadelphia, Jan. 30-Feb. 3. Sec., Mr. C. D. Koch, Professional Credentials Bureau, 422 Perry Bldg., Philadelphia.
VERMONT: Burlington, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

Montana October Examination

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, Oct. 3-5, 1922. The examination covered 10 subjects, and included 50 questions. An average of 75 per cent. was required to pass. Of the 8 candidates examined, 7 passed and 1 failed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Indiana University	(1920)	75.6
State University of Iowa College of Medicine	(1917)	79.5
University of Minnesota	(1921)	82.6
Creighton University	(1921)	82.7
Medical College of the State of South Carolina	(1900)	93.8
University of Vermont	(1913)	76.8
University of Pressburg, Hungary	(1921)*	80.7
FAILED		
Medical Dept. of the Univ. of the City of New York	(1893)	53.9

* Graduation not verified.

Washington July Examination

Mr. William Melville, secretary, Washington Department of Licenses, reports the oral and written examination held at Spokane, July 6, 1922. The examination covered 14 subjects, and included 140 questions. An average of 75 per cent. was required to pass. Of the 7 candidates examined, 4 passed and 3 failed. Thirty-eight candidates were licensed by reciprocity, and one candidate was licensed by endorsement of credentials. Eight candidates received chiropractors' licenses by reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Northwestern University	(1922)	80.95
Harvard University	(1920)	80
Jefferson Medical College	(1921)	75
FAILED		
Northwestern University	(1922)	60, 60
University of Berlin	(1918)*	50

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Los Angeles	(1921)	California
Chicago College of Medicine and Surgery	(1915)	Illinois
College of Physicians and Surgeons, Chicago	(1903)	Illinois
Illinois Medical College	(1902) Oregon, (1903)	Illinois
Loyola University	(1916), (1917)	Illinois
Northwestern University	(1921)	Montana
Rush Medical College	(1910)	Illinois
University of Illinois	(1917), (1919)	Illinois
State University of Iowa College of Medicine	(1907) (1919) Iowa	Montana
Kansas Medical College	(1910), (1913)	Kansas
University of Kansas	(1920)	Kansas
University of Louisville Medical Department	(1913)	Oregon
College of Phys. and Surgs., Baltimore	(1910, 2)	Montana
Maryland Medical College	(1904)	Alaska
University of Maryland	(1909)	Maryland
Harvard University	(1896)	Iowa
Hamline University	(1904)	N. Dakota
University of Minnesota	(1920) Illinois, (1921)	Minnesota
Barnes Medical College	(1907)	Illinois
Central Medical College of St. Joseph	(1900)	Idaho
Creighton University	(1917) Montana, (1921)	Nebraska
University of Nebraska	(1919) Alaska, (1921)	Nebraska
Ohio Medical College	(1906)	Ohio
University of Cincinnati	(1921)	Ohio
Jefferson Medical College	(1900)	Montana
University of Pennsylvania	(1918)	Penna.
University of Tennessee	(1918)	W. Virginia
Western University, London, Ont.	(1904)	Nebraska

ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Pennsylvania	(1919)	N. B. M. Ex.

* Graduation not verified.

Book Notices

ENDOCRINE GLANDS AND THE SYMPATHETIC SYSTEM. By P. Lereboullet, P. Harvier, H. Carrion, and A. G. Guillaume. Translated by F. Raoul Mason, M.D., Instructor in Pediatrics, New York Post-Graduate Medical School and Hospital, with the Collaboration of Daniel R. Ayres, A.B., M.D., Assistant Professor of Gynecology, New York Post-Graduate Medical School and Hospital. Cloth. Price, $6. Pp. 378, with 31 illustrations. Philadelphia: J. B. Lippincott Company, 1922.

This book contains chapters on the physiology, pathologic anatomy, diseases and therapy (including organotherapy) of the ductless glands and the sympathetic nervous system. There is a good deal of duplication of material and discussion, but the chief defect is lack of knowledge and critical sense on the part of the authors. The reader may form his own opinion of the reliability of the authors in their statement of facts, from the following quotations:

Milk and eggs can sometimes be considered as organotherapeutic products.

The adrenal secretion has a specific neutralizing effect on certain poisons.

Addison's disease can be considerably improved or even cured by organotherapy.

It has been known for a long time, for instance, the part played by the stimulation of the sympathetic in Basedom's disease, the majority of the symptoms of myxedema have their origin in alterations of the sympathetic.

Faradization of the thyroid decreases the secretion of the gland.

Arterial hypertension is due to hyperfunction of the adrenals.

Pregnancy can be considered a state of autointoxication.

The placenta is a galactogogue.

Dried extract of the cow's mammary gland is an efficacious galactogogue.

The extract of the lung has been used with some degree of success in purulent pleurisy, and some very good results have been obtained in pulmonary tuberculosis.

Extracts of the kidney have given the best results in the acute symptoms of uremia, and in eclampsia of pregnancy. In acute nephritis, complete cures have resulted.

The book is not a contribution to either the art or the science of medicine.

TREATMENT OF INJURIES OF THE PERIPHERAL SPINAL NERVES. By Sir Harold J. Stiles, K.B.E., F.R.C.S., Regius Professor of Clinical Surgery, University of Edinburgh, and M. F. Forrester-Brown, M.S., M.D. Cloth. Price, $4.30. Pp. 180, with 58 illustrations. New York: Oxford University Press, 1922.

In this monograph, as the authors state in the introduction, "an attempt is made to place at the disposal of the general surgeon, who may be called upon to deal with an occasional case of peripheral nerve injury, the experience which has been gathered from the exceptionally abundant material provided by the Great War; . . . to map out for the surgeon who has no special experience of the subject those paths which will lead to a successful result for himself and his patient, and to help him avoid those pitfalls which have entrapped most workers at first, before they learned to look out for them." This object has been successfully accomplished. The work is divided into three parts. The first part takes up anatomic considerations, discussing in detail the nerves most commonly injured, and the effects of complete division; diagnosis, including general principles and special difficulties; types of lesion found at operation; indications for operation; choice of type of operation; prognosis; order of recovery, and treatment after operation. These subjects are handled briefly, but in a practical, clinical way, and the facts are thoroughly up to date. The second part deals with the operative treatment of war injuries of the peripheral nerves. After discussing general considerations, it considers injuries to the nerves of the upper extremity; injuries to the nerves of the lower extremity, and procedures when end-to-end union cannot be effected. The illustrations showing the surgical anatomy of these operations are of unusual excellence. One can at once detect that this chapter was written by Sir Harold Stiles, although this is not stated. The operations are discussed in an exceptionally able way, typical of the practical knowledge and familiarity with anatomic detail that characterizes this great English surgeon. It is unfortunate, however, that nowhere in the monograph is it stated that this part of the work is an exact copy of both the text and the illustrations of the chapter by the same title contributed by the author in Volume II of "Orthopaedic Surgery of Injuries," edited by Sir Robert Jones, which appeared in 1921, by the same publishers. The third part deals with tendon transplantation in cases of peripheral nerve injuries. In it are discussed indications essential for a successful operation, and it ends with details of some special operations, taking up, in order, operations for musculospiral paralysis, for complete flexor paralysis in the upper limb, for partial flexor and extensor paralysis in the upper limb, for quadriceps paralysis and injury, for paralysis of the tibialis anticus, or a single extensor, and for complete external popliteal paralysis. The illustrations in this chapter also are of unusual value, showing clearly the surgical anatomy and the operative details. The entire work is concise, practical and authoritative.

QUESTIONS NEUROLOGIQUES D'ACTUALITÉ. Vingt Conférences, Faites a la Faculté de Médecine de Paris, 1921. Par MM. S. A. K. Wilson, Ch. Chatelin, H. Claude, G. Roussy, Guillain, Lhermitte, Souques, Babonneix, André Léri, P. Sainton, A. Sicard, Crouzon, Poulard, Ch. Foix, Laignel-Lavastine, Vurpas, Bourguignon, Béhague, Bouttier, Pierre Marie. Introduction par M. Le Professeur Pierre Marie. Paper. Price, 28 francs. Pp. 551, with illustrations. Paris: Masson et Cie, 1922.

This series of addresses on live neurologic subjects, each by a man whose name is not only internationally known but also identified with recent research in the topic in question, constitutes one of the most remarkable collections of authoritative monographs yet published. Each contains a review of the whole question treated, prepared for a general medical audience and therefore of interest to every physician. The addresses are on progressive lenticular degeneration, by Wilson; cerebral tumors, by Chatelin; serous meningitis, by Claude; sensory disturbances of cerebral origin, by Roussy; spinal cord traumatisms, by Guillain; epidemic (lethargic) encephalitis, by Lhermitte; paralysis agitans, by Souques; infantile encephalopathies, by Babonneix; syphilitic muscular atrophies, by Léri; exophthalmic goiter, by Sainton; algias and their treatment, by Sicard; atypical familial nervous disease, by Crouzon; pupillary modifications, by Poulard; medullary automatism, by Foix; thyreogenous psychoses, by Laignel-Lavastine; minor mental syndromes, by Vurpas; chronaxis, by Bourguignon; traumatic epilepsy, by Béhague; epilepsy, by Bouttier, and Does man possess preformed or innate language centers? by Marie.

THE HEART AS A POWER-CHAMBER. A Contribution to Cardio-Dynamics. By Harrington Sainsbury, M.D., F.R.C.P., Consulting Physician to the Royal Free Hospital and the City of London Hospital for Diseases of the Chest. Cloth. Price, $3.75. Pp. 248, with 23 illustrations. New York: Oxford University Press, 1922.

This is in no sense a treatise. It is rather a collection of essays on some of the problems connected with the heart in health and in disease. There are considered such widely diverse topics as the mode of contraction of the ventricular muscles, the bruits of mitral disease, back-pressure effects, the utilization of the blood as a carrier of remedies, venous pulsations, the automatic mechanism of the heart, heart disease, heart failure and treatment. The subjects are presented from the standpoint now of anatomy, now pathology, now physiology, now physics; or with statements based on experimental or clinical observation or offered as pure theory. The style is generally clear with frequent allusion and classical quotation. The book is interesting, and at times throws illuminating side-lights on certain phases of cardiology. As a whole, however, it is disappointing and makes one wonder why it was written.

DA PATHOGENIA DO SOMMO, PARTICULARMENTE NA ENCEPHALITE LETHARGICA. Por el Dr. A. C. Pacheco e Silva. Paper. Pp. 15, with 11 illustrations. São Paulo, 1922.

After some research work at the Salpêtrière with material from three cases of epidemic encephalitis, the author comes to the conclusion that epidemic encephalitis offers a good opportunity for studying the pathogenesis of sleep. As the infundibular region shows changes and the pituitary seems normal, in encephalitis, Pacheco thinks it more justified to place the sleep center in the infundibular region, as suggested by Claude and Lhermitte, rather than the pituitary, as suggested by Salmon. Marie, under whose auspices the work was conducted, expresses no opinion as to its value, in the introduction.

Medicolegal

Right to Registration Under Harrison Narcotic Law

(Starnes v. Rose (U. S.), 282 Fed. R. 336)

The United States District Court, Northern District of Georgia, in granting a writ of mandamus to compel the defendant, a collector of internal revenue, to register under Section 1 of the Harrison Narcotic Law a physician licensed to practice under the Georgia laws, says that a writ of mandamus does not compel an act as to which the officer has discretion; and the question was whether the collector has discretion in reference to registering a practicing physician, under Section 1. Registration was refused or suspended in this case on the ground that two indictments were pending against the applicant, charging offenses against the narcotic act. The collector justified his refusal by Section 11 of Regulation 35 of the Treasury Department, as amended by Treasury Decision 3139 of March 2, 1921, providing, among other things, for the reference of the application to the supervising federal prohibition agent of the department in which the applicant proposes to engage in the business or occupation within the scope of this regulation, for his investigation and approval or recommendation for rejection; and that unless the applicant's qualifications are found to be satisfactory, the applicant will be rejected by the collector. The collector relied also on Instructions for Enforcing the Provisions of Treasury Decision 3139, of July 26, 1921, which direct that "persons who have been arrested and held for action by the grand jury, or who have been indicted, will be held by the collector as under investigation, to await the outcome of the trial. In the event of conviction, registration may be refused."

The Harrison Narcotic Law is not a licensing act whose aim is to control the dispensing of narcotics by confining the dispensation to proper persons; for that is an exercise of the police power as to opiates which is not possessed by Congress. The act rests on the power to tax, and its provisions for registration and its restrictions on the dispensation of narcotics are for the purpose of safeguarding the tax on the dispenser and on the drug. Its enforcement is left to officers of the revenue. For these purposes, it properly requires a registration of persons engaged in the businesses enumerated in Section 1, and makes it a crime to carry on such a business without registration. But to prohibit a practicing physician from prescribing narcotics unless he registers, and then to refuse to register him, would, to that extent, be to prohibit and regulate his practice of medicine, a thing within the province of the state, and not of the United States, and in contradiction of the revenue purposes of the act.

The act contains no enumeration of qualifications for a registrant, except as being engaged in one of the businesses mentioned; and it has no provision for a refusal of registration to him. Section II of Regulation 35, indeed, assumes that Congress meant that the registrant should be lawfully engaged under the laws of the state in the business for which he would register, and requires that inquiry be made into that fact. The qualifications referred to therein are those fixed by the state law for the business in question. Neither the collector nor his superior officer has power to add any other qualification or obstruction to registration. Regulations attempting this would not be "for the carrying of the provisions of the act into effect," as authorized therein, but would subvert the registration required by it. The instruction of July 26, 1921, was not made by "the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury," and so was not authorized by the act; but, if it were, in attempting to make a pending charge of crime a ground for refusing registration, it would be unsustainable. Even after conviction, to do so would add a deprivation of vocation to the punishment fixed by law. Prior to conviction, there is only an accusation, of which the registrant is presumed to be innocent. The determination of those who may properly practice medicine or otherwise dispense drugs belongs to the agencies of the state. The collector must register on proper application all who are by the state law permitted to dispense them. He has no discretion in the matter.

Society Proceedings

SOUTHERN SURGICAL ASSOCIATION

Thirty-Fifth Annual Meeting, held at Memphis, Tenn., Dec. 12-14, 1922

The President, DR. C. JEFF MILLER, New Orleans, in the Chair

Chronic Obstructive Jaundice: Report of Nine Cases Treated by Cholecystogastrostomy

DR. WILLIAM A. DOWNES, New York: All patients suffering from chronic obstructive jaundice should be operated on, as surgery offers the only hope of relief. Internal drainage of the bile ducts is preferable to external drainage. The slightly greater risk involved in anastomosing the gallbladder over simple drainage is more than offset by the increased comfort of the patient, plus the added advantage of retaining the biliary secretion. Besides, in the event of a cure by external drainage, a secondary operation is necessary to close the fistula. I have found it easier to unite the gallbladder to the stomach than to the duodenum; and, since the passage of bile through the stomach is harmless, I consider cholecystogastrostomy the operation of choice.

Fractured Spine: Consideration of the Practical Care and Treatment

DR. WALTER C. G. KIRCHNER, St. Louis: In fractures of the spine, too much stress has been laid on the diagnosis and treatment of the lesion itself, and not enough attention has been paid to matters relating to the welfare of the patient. I had a case of pronounced fracture and dislocation of the fourth and fifth lumbar vertebrae in which there was complete paralysis of the lower limbs, with loss of bladder and rectal function. In spite of high grade decubitus, emaciation and weakness that were present, great improvement in the patient's condition resulted from careful handling and persistent attention to detail, so that he was able to be up and about and, in a restricted sense, help himself in his daily needs, thus dispensing with special care and nursing. Treatment must be directed to the control of shock, the correction of deformity, relief of pressure on the cord, and the prevention of sepsis, decubitus and a state of inanition. The patient's mental state must receive attention. Catheterization of the bladder should be avoided. Intelligent and painstaking nursing and mechanical measures are important factors in aiding improvement or recovery.

Traumatic Brain Lesions

DR. E. DUNBAR NEWELL, Chattanooga, Tenn.: A stereoscopic roentgenogram should be taken of every head injury when the blow has been sufficient to cause a fracture of the skull or to render the patient unconscious. Fracture of the skull per se does not indicate that the patient has been injured seriously. With the symptoms of lesion to the brain or its membranes present, the absence of a fracture does not alter in the least the treatment or the prognosis. The failure of the roentgen ray to detect a fracture of the base does not mean that one does not exist. Basal fractures must not be considered hopeless; certainly 75 per cent. of these patients may be saved if they are watched intently and intelligently treated.

Influence of Hemorrhage on the Mortality in Gunshot Wounds and Other Injuries of the Abdomen

DR. J. M. MASON, Birmingham, Ala.: The mortality of 88.8 per cent. in the large hemorrhage series, as compared with 31.5 per cent. in the small hemorrhage series, teaches that our treatment of hemorrhage must be improved. Transfusion must be employed more extensively. Autoreinfusion should be practiced in selected cases. If cases are seen early, and

observation indicates that hemorrhage is not progressive, operation may even be deferred a short time, while waiting for reaction, and while efforts are being made to obtain donors for transfusion.

Papilloma and Adenoma of the Gallbladder

DR. IRVIN ABELL, Louisville, Ky.: Benign tumors of the gallbladder, notably papilloma and adenoma, are not so rare as formerly thought. They occurred once in every thirty-six cases of my series. The invariable presence of chronic inflammatory changes in gallbladders containing such tumors would argue the importance of chronic irritation as an etiologic factor in their development. The overshadowing clinical picture is that of cholecystitis, there being no correlation of symptoms with the presence of such tumors. The fact that such tumors occur in the course of chronic cholecystitis is an additional argument in favor of cholecystectomy.

Important Considerations in the Treatment of Fractures of the Shaft of the Femur

DR. ALBERT O. SINGLETON, Galveston, Texas: The early reduction of fractures of the femur under spinal anesthesia with the aid of the fluoroscope or of roentgenograms, and by placing the splint in position before reduction, will succeed in a number of instances in securing and maintaining good position. The Thomas splint is the splint of choice, with provision for flexion of the knee. Extension is necessary in all cases, whether open or closed reduction is made, and whether or not plates or other methods of fixation of the bone are used. Skeletal extension or traction is superior to skin traction when there is overriding of the fragments, particularly in fractures of the lower end of the femur. It is important not to neglect the muscles, tendons and joints and allow them to suffer from disuse and atrophy.

Chronic Ulcerative Colitis

DR. HARVEY B. STONE, Baltimore: One of the striking clinical characteristics of chronic ulcerative colitis is its chronicity and recurrent nature. When it resists medical treatment or becomes severe, operative intervention is indicated. Ileostomy and separate appendicostomy for colon irrigations, with exclusion of the colon from function, offers the best results.

Surgery of the Acutely Inflamed Gallbladder

DR. ROBERT CALDWELL, Nashville, Tenn.: Every case of acute cholecystitis should be treated surgically. Operation should be done as early as possible after the onset of the symptoms. The treatment should be a cholecystectomy when at all possible. In the severe cases, operation should be done the quickest way and with the least manipulation. The leaving of a clamp on the cystic duct and vessel will meet this requirement.

Brain Abscess

DR. CHARLES BAGLEY, JR., Baltimore: In a series of twenty cases of brain abscess, seventeen patients were operated on, with a mortality of 45 per cent. In eight of the cases in which operation was performed, the patients died; and the three who were not operated on died. A necropsy was performed in eight of the eleven fatal cases.

The Patency of the Fallopian Tubes Ascertained by Transuterine Injection of Fluids

DR. I. S. STONE, Washington, D. C.: The method was first tried during the operation on a young woman with acute bilateral salpingitis and appendicitis with extensive pelvic peritonitis. We were impelled to pursue a conservative course because the patient was contemplating marriage in the near future. It was considered folly to leave a tube which was dripping with pus, yet we allowed the left tube and corresponding ovary to remain in situ, although the specific nature of the infection was beyond question (the responsible party confessed it). After opening the abdomen and removing the right tube and ovary with the appendix, all of which were hopelessly destroyed, we proceeded with the injection. The cervix uteri was caught with tenaculum forceps; a large glass syringe filled with 1:1,000 hot mercuric chlorid solution was introduced into it and passed through the internal os. Firm pressure with the hand caused a small stream of the solution to appear at the pavilion, which was caught on a sponge and not allowed to flow into the abdomen. Besides the transuterine irrigation of the left tube, the same solution was used to irrigate its distal end by distention and flushing until we reached every possible fold in its mucosa. After a stormy first night the patient recovered, married, and bore her first child nine years afterward, and a second child two years after that. The patient and her two daughters are now living and in excellent health.

Surgical Conditions of the Right Side of the Abdomen

DR. W. F. WESTMORELAND, Atlanta, Ga.: The majority of these patients are not immediately cured by operation. The mechanical faults are corrected, but the rapidity of the convalescence depends on intelligent medical care. All of these patients have acidosis, usually of a very high grade, and generally characterized by an acute fall and spring exacerbation. Sodium bicarbonate in sufficient dosage to control the acidosis should be taken. The diet should not be restricted, but well balanced, with plenty of green vegetables and fruit, particularly ripe oranges or orange juice. The patient should have plenty of sunlight and fresh air and light exercise in the open.

Fractures of the Elbow Joint and of the Lower End of the Humerus

DR. EDGAR LORRINGTON GILCREEST, San Francisco: For the treatment of fractures in the vicinity of the elbow joint, with the exception of fracture of the olecranon process, the fully flexed position offers the best results. Often a splint is unnecessary, the forearm being strapped to the upper arm and fixed to the chest with a bandage. The advantages of the flexed elbow positions are: (1) It gives the most complete anatomic reposition of fragments and the best fixation; (2) it favors the retention of the more important flexion function of the joint, and (3) it cooperates with gravity in the subsequent restoration of function.

Mesenteric Thrombosis

DR. JAMES F. MITCHELL, Washington, D. C.: Mesenteric thrombosis is of particular interest because of its gravity, the difficulty of diagnosis, and the poor results of surgical treatment. Pathologically, the occlusion may be either venous or arterial, or both vessels may be involved. Venous occlusion is less dangerous than arterial and is less frequent, occurring in about 40 per cent. of cases. It is due in most instances to a descending thrombosis, or may be in itself a primary affair due to some infectious process in the intestine, most often appendicitis. Arterial occlusion occurring in about 60 per cent. of cases is usually attributed to arteriosclerosis, endocarditis or some infectious process elsewhere. This explanation will answer for those cases in which the catastrophe occurs in the course of or following some infection or surgical condition. There are many instances, however, for which no explanation can be given for the source of the embolus that has caused the obstruction. As a matter of fact, most of the cases which come into the hands of the surgeon are of this type, and this fact possibly offers a partial excuse for the extreme infrequency of a preoperative diagnosis. The superior mesenteric artery is occluded more frequently than the inferior, the usual explanation being that its diameter is nearly three times as great as that of the inferior; that it arises from the aorta at a higher point than the inferior, thus having an earlier opportunity of intercepting an embolus, and that its course is nearly parallel to that of the aorta, while the inferior runs off at an acute angle. The result of the occlusion is usually a hemorrhagic infarct, a pathologic condition that has never been satisfactorily explained, except that while the superior mesenteric artery is not anatomically a terminal or end artery, it nevertheless is so physiologically.

As to treatment, operation at the earliest possible moment with immediate resection of the affected area, with a safe margin of healthy bowel, offers the best chance of recovery. The results are disappointing from a statistical point of view. The mortality in cases in which operation is performed is variously estimated at from 75 to 90 per cent.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

December, 1922, **30**, No. 6

*Pathology of Bronchial Asthma. H. L. Huber and K. K. Koessler, Chicago.—p. 689.
*Intestinal Digestion of Connective Tissue. J. Buckstein, New York.—p. 761.
*Psychologic Tests Applied to Diabetic Patients. W. R. Miles and H. F. Root, Boston.—p. 767.
*Experimental Observations on Localization of Pain Sense in Parietal and Diaphragmatic Peritoneum. J. A. Capps and G. H. Coleman, Chicago.—p. 778.
*Osteitis Deformans in Monkeys. E. P. C. White, Philadelphia.—p. 790.
*Cholera Acidosis and Its Therapy. M. Tsurumi and T. Toyoda, Dairen, Manchuria.—p. 797.
Vitally Stainable Reticulation and Chromatic Granules in Erythrocytes Preserved in Vitro. O. H. P. Pepper, Philadelphia.—p. 801.
*Effect of Atropin on Gastric Function, as Measured by Fractional Analysis. B. C. Lockwood and H. G. Chamberlin, Detroit.—p. 806.
*Anemia of Chronic Nephritis. G. E. Brown and G. M. Roth, Rochester, Minn.—p. 817.

Pathology of Bronchial Asthma.—A pathologic histologic examination of the finer structure of the bronchi was made by Huber and Koessler. The findings suggest a certain parallelism between the clinical picture and the structural changes. The outstanding finding is the evidence that the actual thickness of the walls of bronchi and bronchioli of more than 0.2 mm. outside diameter is increased, as compared with similar structures in nonasthmatic persons. This difference is due to increased thickness of all layers, from the epithelium to the outer fibrocartilaginous layer. Hyperemia and cellular infiltration of the wall and increased activity of the glands lead to swelling and thickening and this can produce, mechanically as well as chemically, irritation of the peripheral nerve endings in the tube, which may indirectly cause bronchospasm. The abundant secretion of the epithelium and the hyperactive glands obstruct, in some instances completely, the already narrowed lumen of the middle sized and small bronchi and the bronchioli. In this way both systems, the exudative and the bronchomuscular, act simultaneously in the production of the stenosis, in some cases one more than the other but always both to some extent. Even in the purely allergic asthma of an infant 16 months old, which at that age already showed definite thickening of the bronchial wall, as compared with a well infant of the same age, the exudation into the bronchi and bronchioli with complete obstruction of some is proof of this combined involvement. These observations make it plain that in man, at least, the allergic reaction of the tissues is not confined alone to the smooth muscle fiber system, but involves also the whole organ system which serves edudative processes, endothelium, epithelium, capillaries and glands. Cases are cited and the literature is reviewed. The paper is well illustrated.

Intestinal Digestion of Connective Tissue.—A method is presented by Buckstein for the study of the digestion of connective tissue, when introduced directly within the lumen of the small intestine of the human being. Connective tissue digestion may occur within the small intestine, and is not dependent entirely on gastrogenic function. The absence or presence of connective tissue in the stool, throws no light on the nature of the gastrogenic function, since the small intestine is definitely involved in its digestion.

Psychologic Tests for Diabetics.—Diabetic patients frequently complain of poor memory and power of attention, but objective proof of this has been lacking. By certain psychologic tests applied in such cases as well as to suitable controls it was found by Miles and Root that diabetic patients with hyperglycemia and glycosuria at the beginning of treatment show a decrement of about 15 per cent. or more in memory and attention tasks. The loss is in amount rather than in quality. With treatment the diabetic improves rapidly in his psychologic status, approaching but not quite reaching normal. In accuracy and quickness of movements five treated diabetics, whose disease was of long duration, were 20 per cent. below normal.

Localization of Pain Sense in Peritoneum.—According to Capps and Coleman, the parietal peritoneum and its underlying serosa, so far as explored—namely, all the anterior median areas and the lateral areas as far as the anterior superior spines—are sensitive to pain from strong pressure of a smooth point or light pressure or lateral movement of a rough point of wire. The pain elicited by stimulation of the parietal peritoneum is localized with considerable accuracy by the patient, the error being less than one inch. The authors' observations confirm the conclusions of Ramstrom and Lennander that the parietal peritoneum is devoid of pressure sense. The peritoneum covering the diaphragm is devoid of pressure sense as applied by light contact or stroking of a beaded wire point. But to strong pressure with a beaded point or light contact with a rough point it is acutely responsive to the sense of pain. The localization of pain from stimulation of the diaphragmatic peritoneum is never in the diaphragm itself. It is always referred to some distant part. Stimulation of the outer margin causes diffuse pain over the lower costal region and subcostal abdominal wall. Stimulation of the central portion produces pain over a sharply limited point somewhere along the trapezius ridge. These impulses are doubtless carried by afferent fibers of the phrenic nerve to the cervical cord and thence referred to the neck by the sensitized cutaneous nerves of the fourth cervical segment. This pain has not been observed along the course of the phrenic nerve itself.

Osteitis Deformans Stage in Deficiency Disease.—White's study of osteitis deformans in monkeys would seem to suggest that Paget's disease may be just one stage in a deficiency disease. It may be a reparative response: (1) through a disordered neurotrophic mechanism, (2) through the perversion of the calcium governing glands which have been disordered by an improperly balanced diet, or (3) through the addition of an excess of calcium to the diet of an animal whose body fluids were unable, through previous faulty diet or other disorders, to hold it in solution.

Therapy of Cholera Acidosis.—The alkali content of the blood in mild cases of cholera is practically the same as in health. But in the severer, and especially in the very serious cases, a marked decrease of alkali is observed, leading to acidosis. By the injection of alkali, the blood alkali in cholera cases is generally increased temporarily or permanently; that is to say, the number of drops by the stalagmometer (according to Traube's method) increases. The occasional decrease of the number of drops is believed to be due to the increased acid produced in the body and to the great increase of tolerance to alkali in consequence of acidosis in an acute form. The mortality after the injection of sodium bicarbonate-saline in forty-nine cases, observed by Tsurumi and Toyoda, was 28.4 per cent., while the mortality in 480 cases in which no alkali was given, but instead saline or serum, or both, was 42.7 per cent., a difference in favor of alkaline therapy of 14.3 per cent.

Effect of Atropin on Gastric Function.—Lockwood and Chamberlin found that the effect of atropin on the human stomach is to depress both the secretion and motor action, but is much less than that observed in lower animals. Maximal clinical dosage of atropin depresses both the free and total gastric acidity about 30 per cent. The same dosage lessens motor movements in the human stomach enough to delay the evacuation time after an Ewald meal about ten minutes. Bile is more frequently observed after atropin, probably due to greater relaxation of the pylorus.

Anemia of Chronic Nephritis.—The anemia of uncomplicated chronic nephritis was studied by Brown and Roth from several standpoints. Evidence is presented to show that the anemia of uncomplicated chronic nephritis develops in the absence of blood loss, and this anemia is not due to excessive hemolysis. Evidence is also presented which indicates that the bone marrow suffers damage concomitantly with renal, retinal and cardiac tissues. Chronic nephritis is a constitutional disease; accumulating evidence points to primary vascular injury of widespread distribution, renal,

cardiac and retinal tissues and the bone marrow tissues reveal secondary effects of vascular disease. The unknown agent causing renal insufficiency is probably the etiologic factor in the disturbance of hematopoiesis; in other words, a common cause is present. The anemia of chronic nephritis, if present to the degree indicated, has a prognostic value similar to that of creatinin retention.

Canadian Medical Association Journal, Toronto

December, 1922, **12**, No. 12

*New Attempts to Procure Immunity to Malignant Disease in Man. S. Russ, London.—p. 841.
Recent Advances in Roentgen-Ray Treatment. E. R. Morton.—p. 844.
Thyroid Disease. N. J. MacLean, Winnipeg, Man.—p. 847.
Goiter. R. E. McKechnie, Vancouver, B. C.—p. 854.
Goiter Problem—From the Patients Standpoint. F. N. G. Starr, Toronto, Ont.—p. 858.
Exophthalmic Goiter. J. K. McGregor, Hamilton, Ont.—p. 860.
Comparisons of Clinical and Radiologic Findings in Lung Diagnosis. F. S. Bissell, Minneapolis, Minn.—p. 863.
Diagnosis of Empyema. W. S. Lemon, Rochester, Minn.—p. 867.
Roentgen-Ray Findings in Empyema and Abscess of Lung. L. R. Hess, Hamilton, Ont.—p. 871.
Deficiency Diseases. F. H. Wetmore, Hampton, N. B.—p. 873.
*Surgery of Duodenal Membranes; Results of Treatment. R. P. Cromarty, Brandon, Man.—p. 876.
Treatment of Prostatism. D. W. MacKenzie and M. I. Seng, Montreal, Que.—p. 879.
*Respiratory Complications After 7,000 Administrations of General Anesthetics. D. C. Aikenhead, Winnipeg, Man.—p. 884.
Focal Infection in Tonsils of Adults Suffering from Subacute and Chronic Systemic Disease. R. S. Pentecost, Toronto, Ont.—p. 886.
Throat Conditions in Children. E. Boyd, Toronto, Ont.—p. 891.
Advantages of Gas Inflation in Obstetric and Gynecologic Diagnosis; Importance in Study of Causes of Sterility. R. Peterson, Ann Arbor, Mich.—p. 893.
Case of Chronic Rhinitis Treated by Radium. W. H. B. Aikins, Toronto, Ont.—p. 897.

Procuring Immunity to Malignant Disease.—Russ reports on attempts made in thirty cases to immunize patients suffering from cancer against their own tumor cells. In these cases the disease was at such a stage that complete surgical removal was not considered possible, but it was not so far advanced as to preclude a prospect of life for some months. Of these patients, five were suffering from carcinoma of the breast, diagnosed by microscopic examination. A limited operation was performed, the primary growth only being removed, and the axillary glands left. Then Russ made his injections of tumor tissue. When last seen, these patients were all in good health without evidence of recurrence. In some of the cases the disease had been very advanced. In reviewing these results, Russ says, it much be borne in mind that in almost all the cases the stage of the disease rendered any other form of treatment inadvisable. Briefly, the procedure employed was as follows: The tumor removed at operation is minced and exposed to the roentgen ray—a dose of 2 rads. (The electroscope is standardized with a known quality of radium, and the time required for an effective exposure to the roentgen rays to obtain the equivalent of a "rad," must be determined as the exposure goes on.) The minced tumor is sucked into a long glass syringe fitted with a wide aperture and canula, and equal quantities of this radiated material are injected into two pockets previously made in the abdominal wall. The quantity of material injected has varied from 4 to 15 c.c.; in most cases it is more than 8 c.c.

Surgery of Duodenal Membranes.—During operation performed for the relief of stasis due to bands on the colon, terminal ileum, etc., a condition of membranes on the duodenum has been observed by Cromarty in a large number of cases. The different types of duodenal membranes referred to ranged all the way from sheets closely overlying the duodenum and fixed at the omental and mesocolic attachments, to dense cordlike bars from the liver or colon, spreading out over the duodenum. The latter have frequently caused distinct constriction of the duodenum, while the first always tend to cause longitudinal puckering of the duodenal wall, and consequent interference with its proper muscular function and disturbance of its outline. The results of surgical treatment are gratifying. Cromarty asserts that the importance of removing the duodenal membranes as a part of the work in operation on colon bands cannot be overestimated. Search for the cause of failure of simple appendicectomy or cholecystectomy in chronic cases, especially with so-called reflex pain high up, has stimulated thorough examination and resulted in blame being laid on these membranes in many cases. In order of frequency, the commonest symptoms are: (1) gnawing or cramping pain in the epigastrium, 75 per cent.; (2) tenderness in the epigastrium, 56 per cent.; (3) eructations of gas, 50 per cent.; (4) nausea or vomiting, 42 per cent. In many respects these findings are similar to those in duodenal ulcer. But there is one great point of difference, namely, that the pain in ulcer is very definitely related to ingestion of food, whereas in cases of duodenal membranes, the pain tends to be very persistent, pulling and gnawing in type, and is not influenced for the better by taking food.

Respiratory Complications Following Anesthesia.—There were nineteen cases of respiratory complications following the 7,000 administrations analyzed by Aikenhead, with four deaths, giving a morbidity of 0.27 per cent., and a mortality of 0.05 per cent. Cold months show a higher pulmonary rate than warmer months. In January, February, March and December there were nine cases, while in the eight remaining months, they only totalled ten. Respiratory complications occurred after the following operations: Appendectomies, eight; tonsillectomies, four; one each after the following: operation for harelip, work in antrum, removal of thyroid, and extraction of teeth. Of the nineteen cases, nine were definite cases of lobar pneumonia; four cases of bronchopneumonia; one case of pulmonary infarct; one case of abortive type of pneumonia; four cases of mixed respiratory infection.

Illinois Medical Journal, Oak Park

December, 1922, **42**, No. 6

Peptic Ulcer. J. B. Deaver, Philadelphia.—p. 421.
Management of Maternity. W. D. Chapman, Silvis.—p. 428.
Relation of Nose and Throat to Ear Diseases. G. E. Shambaugh, Chicago.—p. 431.
Christian Science from Medical Standpoint. E. Jacobson, Chicago.—p. 434.
Physician an Important Factor in Public Health Problems in Illinois. C. W. Lillie, East St. Louis.—p. 438.
Paravertebral Anesthesia in Abdominal Surgery. N. H. Lowry, Chicago.—p. 440.
Macroscopic Urine Precipitation Test for Active Tuberculosis. F. A. Causey, Peoria.—p. 443.
*Protozoan Débris as Primary Cause of Malignancy. H. B. Flynn, Chicago.—p. 445.
Indications for Surgical Intervention in Toxic Goiter. C. Langer, Chicago.—p. 448.
Present Status of Goiter Problem. C. T. Hood, Chicago.—p. 449.
Roentgenologic and Clinical Findings in Normal Chest. New York.—p. 451.
Life and Health. C. L. Redfield, Chicago.—p. 457.
Plea for Conservatism in Surgical Treatment of Chronic Infections of Maxillary Sinus. C. B. Welton, Peoria.—p. 460.
*Modern Program for Treatment of Syphilis. E. A. Oliver, Chicago.—p. 464.
*Open Air School as Factor in Preventive Medicine. J. Milligan, Jacksonville.—p. 469.
Make-up of Neurotic. M. Solomon, Chicago.—p. 473.
Revival of Artificial Pneumothorax. E. F. Traut, Oak Park.—p. 475.

Protozoon Débris as Cause of Malignancy.—Flynn speaks of a spirillum-like protozoon which she has secured from cases of carcinoma and sarcoma—several months after operation had been performed when the patient was seemingly enjoying improved health. Seventy-five per cent. of these patients had died at the last checking up. This organism fulfils the three laws of Koch. Flynn has never succeeded in isolating this organism from fibromas except when microscopic examination disclosed a tendency to malignant degeneration and the organisms were then present in the blood stream.

Treatment of Syphilis.—Oliver uses arsphenamin and soluble mercuric chlorid, 1 per cent. in physiologic solution of sodium chlorid, in a dosage of 35 minims twice weekly, or the insoluble mercuric salicylate, 10 per cent. emulsion in liquid petrolatum, in dosage of 10 minims every five days. Arsphenamin has been administered by the gravity method, thus avoiding the painful infiltrations so often obtained by using a syringe. Oliver urges that every case be treated individually, and submitted to frequent medical examination and urine analysis.

Open Air Schools as Preventive Measure.—Milligan states that in 1921 there were more than 3,000 open air schools in the United States. The Chicago open air work has been of such a type that it has been a pattern which others have followed and its results have been uniformly favorable. Medical inspection and the services of a school nurse are as essential as teachers in open air schools. The open window rooms need much less equipment; the windows are hung so that they open into the room from the top of the sash to provide the maximum amount of air and the minimum amount of draft. The usual heat is turned into the room and it is only necessary for the children to wear their ordinary outdoor wraps. As a rule, there is no rest period arranged for and no food is provided. This type of room is admirably adapted to keep well children well. Children are chosen now for open air schools for many more ailments than formerly, though probably there will always be more of those suffering from respiratory diseases than any other one illness. It has been estimated that the number of children who would be benefited by the open air school regimen is from 3 to 5 per cent. of the total school population of a community. The greatest accomplishment of this type of school is that it teaches its pupils a regimen that not only helps them in their present state of physical unfitness but will help to prevent future disability.

Johns Hopkins Hospital Bulletin, Baltimore

December, 1922, **33**, No. 382

Diagnostic and Therapeutic Use of Uveal Pigment in Injuries of Uveal Tract and Sympathetic Ophthalmia. A. C. Woods, Baltimore, and A. Knapp, New York.—p. 419.
*Production of Toxic Substances by Pneumococci. A. M. Chesney and A. B. Hodges, Baltimore.—p. 425.
*Growth of Influenza-like Bacilli on Mediums Containing Only an Autoclave Labile Substance as an Accessory Food Factor. T. M. Rivers, Baltimore.—p. 429.
*New Method of Testing Liver Function with Phenoltetrachlorphthalein. H. S. M. Rosenthal, Baltimore.—p. 432.
*Study of Trichomonas Hominis. M. J. Hogue, Baltimore.—p. 437.
Entero-Urethral Fusion in Fetus, Simulating Fetal Ascites. J. C. Baldwin, Baltimore.—p. 440.
Case of Tubal Pregnancy Probably Caused by a Parovarian Cyst. L. Brady, Baltimore.—p. 442.
Isolation of Nucleic Acid from Tissues. W. Jones and C. Folkoff, Baltimore.—p. 443.
Case of Congenital Osteosclerosis. R. K. Ghormley, Baltimore.—p. 444.

Production of Toxic Substances By Pneumococci.—The relationship of the toxic substances obtained from pneumococci by solution of the bacterial cell or by manipulation of pneumonic exudates to the phenomena of intoxication in pneumonia in man is discussed by Chesney and Hodges. They found that filtrates of actively growing cultures of pneumococci in beef infusion broth, normal human serum and defibrinated normal human blood are not toxic for mice when injected intraperitoneally.

Bacillus Para-Influenzae.—Two influenza-like bacilli are described by Rivers which require the addition of only an autoclave-labile substance as an accessory food factor. *Bacillus para-influenzae* or *Hemophilus para-influenzae* has been suggested as the name for this group of organisms.

Phenoltetrachlorphthalein Test of Liver Function.—Phenoltetrachlorphthalein has been intravenously injected and its behavior in the blood stream has been studied in normal animals, in dogs following chloroform poisoning, phosphorus poisoning, and in dogs after ligation of the common and cystic bile ducts. The concentration reached in the plasma of normal dogs, after 5 mg. per kilogram injections, is strikingly constant. Approximately 10 per cent. is present in two minutes, 8 per cent. in three minutes, and from a large trace to absence in fifteen minutes. The rate of disappearance was found higher in two cats, and more rapid in one rabbit. Variation of the dose has a direct influence on the curve obtained. There is a marked increase in these concentrations, with a greatly prolonged rate of disappearance, after injury to the liver parenchyma; the extent to which this occurs depends on the degree of damage to the liver cells, as evidenced by the condition of the animals, and by necropsy findings. Curves approaching normal are obtained if repair has taken place. Curves have been obtained in jaundice due to mechanical obstruction that differ widely from those found in the jaundice associated with extensive degeneration of the hepatic cells. A simplified method is presented by Rosenthal for quantitative determination of the amount of dye in the plasma. A practical test for its qualitative detection is also described.

Study of Trichomonas Hominis.—Sodium chlorid serum water has proved an excellent medium for the cultivation of *Trichomonas hominis*. When the tubes are covered with paraffin oil the organisms live from thirty-five to sixty-six days without being transferred. Attempts were made by Hogue to infect cats, kittens and rabbits with *Trichomonas hominis* but all attempts failed.

Journal of Laboratory and Clinical Medicine, Chicago

December, 1922, **8**, No. 3

*Interpretation of Blood Sugar Estimations That Are Near Normal. H. J. John, Cleveland.—p. 145.
Blood Flow in Man. M. B. Taylor, Ontario, Canada.—p. 153.
Rapid Preparation of Polychrome Methylene Blue Stains for Frozen Sections of Fresh and Fixed Tissues. B. T. Terry, Nashville, Tenn.—p. 157.
Action of Morphin, Codein and Apomorphin as Shown by Perfusion of Medulla of Terrapin (Pseudomys Troosti). W. J. R. Heinekamp, Chicago.—p. 165.
Chemical Changes of Blood Under Influence of Drugs. II. Morphin. H. V. Atkinson and H. N. Ets, Chicago.—p. 170.
*Pathogenicity of Organisms Commonly Regarded as Saprophytes. E. Kellert, Albany.—p. 176.
*Actinomycosis of Gastro-intestinal Tract: Study of Fourteen Cases. J. C. Brogden, Rochester, Minn.—p. 180.
*Intestinal Antisepsis. Effect of Antiseptics on Type of Experimental Intestinal Toxemia. L. R. Dragstedt, C. A. Dragstedt and O. M. Nisbet, Chicago.—p. 190.
Some Points in Metabolism Usually Neglected by Physician. J. F. McClendon and K. March, Minneapolis.—p. 194.
*Hematometric Differential Counting. A. J. Hinkelman, Oklahoma City.—p. 196.
*Quantitative Flocculation Test for Syphilis. Comparison of 500 Cases with Wassermann Test, Using Simplified Sachs-Georgi Technic. H. M. Feinblatt, Brooklyn.—p. 200.

Interpretation of Nearly Normal Blood Sugar Estimations.—When a case of glycosuria is checked by a blood sugar examination and a value of from 125 to 155 mg. per hundred c.c. is found, John says the natural tendency is to disregard this comparatively low figure and to conclude that the patient is nondiabetic because his blood sugar is so near the normal level. In the six cases presented by him the blood sugar was near the normal in all; hence it is clear that a blood sugar level which is near the normal cannot be regarded as normal unless the conditions under which it was obtained are known (whether the individual is on a diet or has been eating sparingly for a time, etc.), and unless one can demonstrate by a glucose tolerance test that the slight rise is of nondiabetic origin. Borderline cases are the most difficult to diagnose and yet the most interesting and the most important. When it is seen that the borderline case has a diabetic trend, a simple restriction of carbohydrates will carry the subject through life comfortably. Usually the total calories need not be changed. On the other hand, if such a patient is allowed to drift along without dietary supervision, he will reach the stage of diabetes when a marked restriction of proteins and total calories, as well as of carbohydrates, will be necessary. In the first instance the man is kept at his work, producing and providing for his family; but if a waiting course is adopted, the man is apt to become a permanent invalid and an economic burden.

Pathogenicity of Saprophytes.—Kellert asserts that under favorable conditions many micro-organisms classified as saprophytes may induce in man profound lesions and even death. Bacteria classified as nonpathogenic when found in association with acute infectious processes are not necessarily secondary invaders or contaminants.

Actinomycosis of Gastro-Intestinal Tract.—Any mass which occurs in the lower part of the abdomen in the region of the ileocecal juncture, particularly one associated with a persistently discharging sinus, Brogden says, should be regarded with suspicion. Repeated examination of the discharge, pathologic examination of tissue from the mass or from the walls of the sinus, marked loss of weight and strength, pronounced anemia, flexion of the thigh without disease of the vertebral column or hip joint, and marked constipation rarely fail to establish the correct diagnosis of actinomycosis of the intestinal tract. Fourteen cases of the

disease have occurred in the Mayo Clinic in the last four years. The acute form is more common; it usually begins as a typical attack of acute appendicitis. The chronic form is insidious in onset, with very slight indefinite pain in the lower abdomen. There may be practically no pain, the mass being the first sign of the disease. Diarrhea is not a constant symptom of the disease. Constipation was the rule in the fourteen cases. The ileocecal coil is most often affected; the stomach and upper small intestine are practically immune. Carious teeth, diseased tonsils, bad hygienic surroundings, overcrowding, or anything that lessens body resistance, are predisposing factors. It is doubtful whether the disease is transmitted from cattle to man. In three of the fourteen cases there was a definite history of exposure to lumpy jaw in cattle. Early operation and excision of the diseased area before the infection spreads to the surrounding tissues, frequent roentgen ray and radium treatments over the abdomen, and large doses of potassium iodid by mouth and sodium iodid intravenously offer the best hope of cure. In the later stages, after extension of the disease to the adjacent organs and sinus formation, radical surgical measures are of no avail. Some patients apparently are cured under treatment with radium, roentgen ray and the iodids; others improve wonderfully only to recur in from two to four years. Death usually occurs from cachexia and extension of the disease to the liver and thorax. The average mortality is from 50 to 70 per cent.

Intestinal Antisepsis.—The experimental work reported by the Dragstedts and Nisbet shows that direct application of antiseptic solutions to short segments of the intestine in animals does not effect sterilization or inhibit the production of intestinal poisons.

Hematometric Differential Counting. — Hinkelman has modified part A of Zollikofer's fluid as follows: yellow eosin, soluble in water, 0.5 gm.; liquor formaldehydi, concentrated, 0.5 c.c.; phenol, 95 per cent., 0.5 c.c.; distilled water, 100 c.c. This fluid causes a complete hemolysis of the red cells, swells the white cells to an extent considerably beyond their natural size and stains differentially.

Comparison of Wassermann and Sachs-Georgi Tests.—Five hundred parallel Sachs-Georgi and Wassermann examinations made by Feinblatt showed an agreement of 93.8 per cent. Of the thirty-one conflicting cases, sixteen were positive to the Sachs-Georgi test and fifteen to the Wassermann test. Of the sixteen patients who reacted positively to the Sachs-Georgi test but negatively to the Wassermann test, fifteen presented definite clinical evidence of syphilis. Of the fifteen patients who reacted positively to the Wassermann test but negatively to the Sachs-Georgi test, eleven presented definite clinical evidence of syphilis.

Minnesota Medicine, St. Paul

December, 1922, **5**, No. 12

Need of Psychopathic Hospital at University of Minnesota. A. S. Hamilton, Minneapolis.—p. 683.
*Surgery of Acute Conditions of Gallbladder. E. S. Judd and W. P. Herbst, Rochester, Minn.—p. 687.
*Vomiting of Pregnancy and Its Treatment. A. G. Schulze, St. Paul.—p. 692.
Pancreatic Cyst in Left Hypochondrium: Extirpated. H. A. H. Bouman, Minneapolis.—p. 697.
*Surgery in Infantile Paralysis. M. S. Henderson, Rochester, Minn.—p. 706.
*Value of Routine Determination of Bleeding and Coagulation Times on Newly-Born Infants. M. Warwick, St. Paul.—p. 713.
Commoner Types of Ocular Tuberculosis. W. E. Camp, Minneapolis.—p. 719.
Delayed Pedicle Flap in Plastic Surgery of Face and Neck. G. B. New, Rochester, Minn.—p. 721.
*Case of Dissecting Aneurysm of Aorta, with Distinctive Roentgen-Ray Findings. F. J. Hirschboeck and P. G. Boman, Duluth.—p. 724.

Surgery of Acute Gallbladder Lesions.—Judd and Herbst point out that the distinction between acute and chronic empyema of the gallbladder is purely clinical, as the surgical and pathologic pictures do not differ, and the acute and chronic conditions have the same macroscopic picture. The points necessary to a clinical diagnosis of empyema are a history of gallstones, an acute pain, and tenderness and rigidity over the gallbladder, usually with fever. In most cases there was a general history of gallbladder disease with a number of hard colics. In only sixteen of the seventy-seven cases reviewed was there a history of jaundice; and in twenty-four of the same number, of fever. The associated conditions found at operation were appendicitis, thirty-five cases; pancreatitis, twenty-seven; common duct stones, six; duodenal ulcer, one; and stones, seventy-seven. Drainage was used more often than not. Pancreatitis occurred in twenty-seven of seventy-seven cases. The mortality is rather low following operative procedures. Of nineteen acute cases one patient died of bronchopneumonia, and of fifty-eight chronic cases one patient died of pulmonary embolism. The operative procedure in these cases depended on the acuteness of the process, the patient's general condition, and the degree of technical difficulty encountered in removing the gallbladder. The treatment of choice is cholecystectomy, but when contraindicated, cholecystostomy is performed, or in some instances, part of the gallbladder is removed.

Treatment of Vomiting of Pregnancy.—Patients whose vomiting is not sufficiently severe to warrant hospital isolation, Schulze says, may be treated at home by means of a high carbohydrate diet partaken of frequently during the day rather than the usual three meals. Lactose solution may be taken by mouth. Alkaline solutions may be administered with the lactose or alternating with it, but it must be remembered that alkalies, while they overcome the condition of acidosis, do not combat the condition which produces it. The urine should be examined frequently to detect a glycosuria.

Surgery in Infantile Paralysis.—Henderson states that surgery is indicated only in the residual paralysis following poliomyelitis and only about 25 per cent. of such patients can be helped by surgical procedures. As a rule, manipulations precede tenotomies, and manipulations with tenotomies, osteotomies, the last named being resorted to only for correction of skeletal deformities. Arthrodeses are occasionally indicated but should be performed only after a careful consideration of the power left so that the patient may use the fixed point to advantage. Lastly, but by no means least, the social status and the habits of the patient must be considered. Plastic operations on tendons are useful, but are applicable in only a small percentage of cases. A weak muscle must not be expected to do the work of a stronger muscle, particularly when it is placed in a new position and is usually at a mechanical disadvantage. Astragalectomy is the operation of choice for calcaneovalgus and in certain other conditions, but should always be accompanied by a posterior displacement of the foot.

Value of Determination of Bleeding and Coagulation Time on New-Born Infants.—Warwick would determine the bleeding and coagulation times, as a routine measure, for every new-born infant on the third, fifth and ninth days. After instituting these tests as a routine measure, of 250 infants, thirteen, or 5.2 per cent., showed a prolongation of the bleeding or coagulation time, or both. Of the 250, only two, or 0.8 per cent., developed symptoms, and one, or 0.4 per cent., died. Of the thirteen showing a prolongation of the bleeding or coagulation time, in whom early treatment was instituted, two, or 15 per cent., developed symptoms and only one, or 7.7 per cent., died. Three, or 23 per cent., showed congenital syphilis.

Roentgen-Ray Diagnosis of Dissecting Aneurysm of Aorta.—In this case, Hirschboeck and Boman found a shadow to the left of the heart, which was radiolucent and not of a uniform density, extending from a point corresponding to the top of the arch of the aorta to the left, outward and downward, nearly to the periphery, forming an obtuse angle, and then turning directly downward toward the diaphragm, where its further course could not be traced on account of its fusion with the denser subdiaphragmatic structures. The unusual radiolucence, with the aortic shadow obviously extending down along the inner portion of this shadow, and the visualization of the hilus markings through it, were considered unusual, and various diagnoses were considered, but the final decision was dissecting aneurysm which had undergone recanalization, at times free of blood, which would permit of this curious radiolucent appearance. This diagnosis was confirmed at the necropsy.

Porto Rico Medical Association Bulletin, San Juan

October, 1922, **16**, No. 139

Microchemistry of Blood. R. del Valle Sárraga.—p. 179.
Child Survey. A. Fernós Isern.—p. 199.
*Dermatomycoses. A. L. Carrión.—p. 204.
Recent Discoveries Affecting Control of Hookworm Disease. R. B. Hill. —p. 210.
Case of Mesenteric Thrombosis. M. Diaz García.—p. 215.
*Progress of a Medical Discovery. A. M. A.—p. 218.

Dermatomycoses.—A special feature of the skin affections due to parasites of vegetable origin observed by Carrión in Porto Rico is the extreme extent and number of the areas affected. Intense pruritus is another feature. He describes three cases. The prompt cure under proper treatment confirmed the diagnosis in one case in which the affection had persisted for a year under various treatments applied on a mistaken diagnosis. In one man, aged 43, the eruption had persisted for fifteen months, the diagnosis wavering between syphilis, uric acidemia, herpes and other skin affections. In the third case, a woman, aged 48, the dermatomycosis was limited to the face. It had persisted for seven years, but promptly subsided under proper treatment when the microscope revealed the mycelium.

Progress of a Remedy.—The enthusiasm with which the profession hails certain forms of progress is generally detrimental to the profession in the long run. It is curious to see how a certain program of five stages is invariably followed by each new remedy: the nascent stage, the stage of attention, the stage when the remedy is regarded as infallible, the stage when it is discredited, and finally, the fifth and last stage, the stage of sedimentation, when wise and ripe judgment of experts has finally settled the exact place to which the remedy or the discovery is entitled. . . . Arsphenamin is now in the sedimentation stage, but organotherapy and endocrinology are far from having reached this stage. Vitamins are now passing through the stage of discredit. The conception of focal infection is in transition between the panacea and the discredit stages.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Dec. 16, 1922, **2**, No. 3233

Etiology of Optic Nerve Atrophy. C. O. Hawthorne.—p. 1153.
Id. II. J. H. Pringle.—p. 1156.
Id. III. H. M. Traquair.—p. 1157.
*Bovine Actinomycosis; Pathogenesis and Treatment by Vaccines. W. M. Scott.—p. 1163.
*Healing of Gastric Ulcer. M. J. Stewart.—p. 1164.
Intravitam Staining: Application to Pathologic Investigation. D. F. Cappell.—p. 1166.
*Primary Chronic Interstitial Nephritis and Arteriosclerotic Kidney. J. S. Dunn.—p. 1166.
Relation Between Oxyuris Vermicularis, Appendicitis and Local Eosinophilia of Appendix Wall. E. H. Eastwood.—p. 1170.
Cholesterol Content of Blood in Anemia and Its Relation to Splenic Function. W. MacAdam and C. Shiskin.—p. 1170.
Degenerative Diseases of Liver. F. B. Carter.—p. 1171.
Hysterical Simulation of Fracture. H. C. Woodhouse and F. C. Jones. —p. 1171.

Vaccine Therapy in Actinomycosis.—Scott asserts that vaccine therapy is a valuable adjuvant in the therapeutics of actinomycosis, virulent antigens giving by far the best and most uniform responses.

Method of Healing of Gastric Ulcer.—Stewart has been carefully examining in the postmortem room, the stomach and duodenum for evidence of scarring, while noting at the same time the incidence of ulceration in these viscera. Statistics are given to show that, in the postmortem room, scarring is met with almost as frequently as gastric ulceration, while duodenal scars occur with about half the frequency of duodenal ulcers. This difference may be accounted for partly by the greater liability of duodenal ulcers to perforate. Single and multiple gastric scars are met with in the ratio of 4 to 1, which is exactly the same as the ratio of chronic to acute ulcers. It is suggested from this that acute and chronic ulcers have an equally good chance of healing. Hour-glass contraction of the stomach is met with in about 6.5 per cent. of all cases of completely healed gastric ulcer—that is to say, in about 8 per cent. of cases of healed chronic ulcer. The incidence of pyloric stenosis is little more than half this. There is no evidence that carcinoma arises in connection with gastric scars, whereas in a series of ninety-eight stomach specimens received from the operating room and submitted to microscopic examination the incidence of carcinoma in cases of simple chronic ulcer was 11.5 per cent. Gastric scars are not always conspicuous, and must be looked for carefully after gently wiping away adherent mucus or food materials. Conclusive histologic evidence of scarring is afforded by the presence of fibrosis of the muscular coat. Only ulcers which have definitely involved the muscular coat leave a permanent scar, and one which can unmistakably be recognized both by naked eye inspection and by microscopic examination. The most striking scars are, of course, those of ulcers which have completely perforated the muscular coat. When an ulcer heals, the continuity of the mucosa is completely restored, but it is usually thinner than normal, and less well supplied with glands. There is no evidence as to whether or not a gastric or duodenal scar readily reulcerates, although it is, perhaps, a legitimate assumption that the thinner mucosa, together with the less vascular fibrous tissue underneath, will be more vulnerable than the normal mucous membrane. It is possible, on the other hand, that certain ulcer producing factors may have disappeared as a result of this cicatrization, and there is evidence to show that the well known recurrent character of the lesion may be dependent rather on the formation of a new ulcer or ulcers than on a breaking down of the old.

Arteriosclerotic Kidney and Chronic Interstitial Nephritis.—The evidence submitted by Dunn is regarded as showing that while arteriolar sclerosis and narrowing is a frequent cause of shrinkage of the renal cortex, it does not by itself produce a condition which is likely to be mistaken for chronic nephritis, either macroscopically or microscopically. Further, it is doubtful if the loss of renal substance occasioned in this way is ever sufficient to cause uremia; death almost invariably results from cerebral hemorrhage. On the other hand, the condition which has been referred to as "primary chronic interstitial nephritis," or renal cirrhosis, which is regarded by some authors as the maximal development of arteriosclerotic atrophy of the kidney, is quite a distinct condition; it is often characterized clinically by a tendency to failure of renal function in its later stages, and pathologically it is distinguishable by the greater degree of derangement of the renal architecture. There is a greater, often a severe, fibrosis of the cortex; the amount of renal substance lost is greater, necessitating hypertrophy of that which remains; there is usually, if not always, evidence of old glomerulitis in the tufts which remain recognizable, and it is suggested that the total destruction and disappearance of many tufts is also due to an earlier inflammatory process.

China Medical Journal, Shanghai

November, 1922, **36**, No. 6

*Experimental Tetany. E. W. H. Cruickshank.—p. 445.
Submucous Resection of Nasal Septum. H. P. Nottage.—p. 469.
Spread, Probable Mode of Infection and Prophylaxis of Leprosy. L. Rogers.—p. 474.
Vitamins: Review. W. H. Adolph.—p. 487.

Experimental Tetany.—The calcium content of 100 c.c. of normal blood amounts to the following average figures: total, 9.12 mg.; plasma, 8.11 mg., and cells, 1.01 mg. In tetany, Cruickshank shows, that these drop to the average figures: whole blood, 5.7 mg.; plasma, 5.26 mg., and cells, 0.46 mg. These figures show a loss of calcium amounting to 37.2 per cent. for whole blood; to 54.4 per cent. for cells, and to 35.2 per cent. for the plasma. Diffusible calcium in normal serum averages from 60 to 70 per cent. while in severe parathyroid tetany it amounts to 94 per cent. of the total calcium. While there is an immediate state of alkalosis following parathyroidectomy, this condition is not necessarily marked, and with the development of the signs of severe tetany it passes rapidly into a condition of acidosis as shown by a steadily falling p_H of the blood. The immediate relief of the condition consequent on the withdrawal of from 70 to 100 c.c. of blood is indicative of a toxic causative factor. The calcium deficiency and the great loss of colloidal calcium are merely indicative of a rapid protein disintegration.

Journal of State Medicine, London

December, 1922, **30**, No. 12

Arsenobenzol in Treatment of Syphilis. C. H. Mills.—p. 507.

Lancet, London

Dec. 16, 1922, **2**, No. 5181

*Menorrhagia in Young Girls. S. Gray.—p. 1261.
Therapeutic Action of Bayer "205" in Nine Cases of Human Trypanosomiasis. G. C. Low and P. Manson-Bahr.—p. 1265.
*Quinidin in Auricular Disease. J. Parkinson and J. W. McK. Nicholl. —p. 1267.
Medicolegal Importance of Blood Groups. S. C. Dyke.—p. 1271.
*Two Cases of Symptomless Perforation of Esophagus. Revealed by Sequels in Lungs. T. A. Brown.—p. 1272.
Use of Thoracoscope in Cases of Artificial Pneumothorax. S. V. Pearson.—p. 1273.
*Case of Rapid and Fatal Absorption of Phenol Through the Skin. W. R. M. Turtle and T. Dolan.—p. 1273.

Menorrhagia in Young Girls.—Inasmuch as an immense majority of cases of excessive menstruation are unassociated with palpable or obvious structural change, Gray would emphasize that menorrhagia is the one condition which does not demand immediate pelvic examination, even in young girls. Unless the symptoms of hemorrhage were absolutely urgent, examination should be postponed until after trial of medical treatment. In most cases the examination will not be needed and the girl will escape the discomfort of an anesthetic. In Gray's opinion the greatest defects in the upbringing of adolescent girls are in providing for them insufficient sleep and almost no real leisure. In the high school and secondary type of school—more especially in the latter—the girls are too hard driven on the working days, the games being almost as much a matter of "drive" as the lessons. Excessive homework is often either permitted or connived at. Parents should be taught that the whole organization of the life of their daughters ought to run more quietly. Not by three days in bed every month, but by an hour or two longer in bed every night; and not by a too strenuous term succeeded by a too strenuous vacation, but by a steady and well regulated interchange of work and play they will best promote the health of their girls—of work that is well within the compass of the girls.

Quinidin in Auricular Disease.—Parkinson and Nicholl observed the action of quinidin in thirty-five cases, comprising six cases of paroxysmal tachycardia, five of paroxysmal auricular fibrillation, five of auricular flutter, and nineteen of auricular fibrillation. Quinidin sulphate was used and was given as a powder in gelatin capsules, each containing 5 grains. Preliminary doses of 5 and 10 grains were given on the first and second day of treatment, respectively, lest there should be any idiosyncrasy toward the drug. It was then increased to 15, 20, 30 and 40 grains daily until the change in rhythm (if any) occurred. The daily amount was given in divided doses. None was given by night. The smallest amount of the drug which effected the change into normal rhythm was 15 grains, 5 grains given on the first day and 10 grains on the second day. As much as 11 drams was given in twenty-five days to one patient, yet no change in rhythm resulted, though the dose reached 50 grains daily on four successive days. In three intractable cases 50 grains was given daily for a short period, but in none was the treatment successful. When normal rhythm was restored, the dose was gradually reduced until 5 grains was taken twice or thrice daily. In some of the paroxysmal cases, in which prolonged administration was requisite, the average dose was 5 grains, three times daily. The conclusions reached are: In paroxysmal auricular fibrillation quinidin is indicated, for in some cases it either inhibits the attacks or reduces their incidence; and no other drug, not even digitalis, will do this. In paroxysmal tachycardia quinidin proves to have little or no effect. In auricular flutter it is likely to prove valuable, for it sometimes restores normal rhythm directly, and if not, may succeed after digitalis alone has converted flutter to fibrillation but not to normal rhythm. In a small proportion of cases with established auricular fibrillation, quinidin restores normal rhythm, which continues with clinical benefit. In most cases it is unsuccessful in that normal rhythm is not restored, or if restored is not maintained, or restoration is unattended by clinical improvement.

Symptomless Perforation of Esophagus.—In the case cited by Brown the assumption is that a fish bone or similar object caused perforation of the esophagus and pleura, and opened up the way for the entry into the lung of septic organisms. Hemoptysis directed attention to the lung condition. Roentgen-ray examination revealed no foreign body; it showed an irregular opacity of the lower two thirds of the right lung, and suggested the presence of a cavity near its base. The patient gradually got weaker and the right side of the chest scarcely moved with respiration. Death ensued. At the necropsy, the right side of the chest was found full of dark brown, foul smelling fluid, containing fragments of disintegrated lung. Only the lower part of the lung was left, and this was almost completely gangrenous, the few areas not so affected being solid and gelatinous in appearance. It was impossible to say what had become of the pleura because the lung was so completely destroyed. There were no adhesions whatever, and no enlarged glands could be found. A small sinus, just large enough to admit a probe, led from the right side of the esophagus, at its lower end, into the gangrenous mass in the right pleural cavity. No foreign body could be found anywhere. The liver and myocardium showed cloudy swelling. A second case illustrates the possibility of morbid changes in the lungs leading to a fatal issue some years after perforation of the esophagus, probably caused by a foreign body, and furnishing no symptoms at the time.

Fatal Absorption of Phenol Through Skin.—Dolan cites the case of a man who unknowingly broke a bottle of phenol in his pocket and within an hour died from poisoning resulting from the absorption of the phenol by the skin.

Medical Journal of Australia, Sydney

Nov. 4, 1922, **2**, No. 19

Restoration of Round Ligaments in Retroversion of Uterus. A. J. Nyulasy.—p. 517.
Streptococcus: Biggest Menace to Mankind. S. Pern.—p. 518.
*Patent Foramen Ovale. C. Joyce.—p. 529.
Normal Gastric Cycle. F. L. Apperly.—p. 523.
*Myxedematous Dyspituitarism. J. P. Hastings.—p. 526.

Myxedematous Dyspituitarism.—Hastings makes use of this term in describing a case which followed a thyroidectomy done in 1915. This induced a synergetic action on the part of the pituitary body which was definitely enlarged. For a year or two following the thyroidectomy, the synergetic action of the pituitary body prevented the development of the myxedematous symptoms. Then the hyperpituitarism was followed by hypofunction and thus produced a clinical phenomenon which is best described as myxedematous dyspituitarism.

Patent Foramen Ovale.—Two cases of patent foramen ovale are reported by Joyce. The patients occupied the same ward simultaneously.

Bulletin de l'Académie de Médecine, Paris

Nov. 21, 1922, **88**, No. 38

*Tuberculosis and Pregnancy. Pinard.—p. 259.
*Carbohydrates and Diet in Diabetes. Desgrez et al.—p. 276.
*Neuroparalytic Keratitis. F. Lagrange.—p. 288.
*Artificial Pneumothorax in Pulmonary Gangrene. P. Emile-Weil.—p. 297.

Tuberculosis and Pregnancy.—Pinard is extremely opposed to Bar's recent paper on therapeutic abortion in tuberculous mothers. He did not see any bad influence of gestation in tuberculous cows. He saw many pregnant women die of tuberculosis, as he has seen other patients dying from it also. He saw healthy children born from mothers dying of tuberculosis, and contents himself by treating the tuberculous woman and separating the child from her after delivery. He asks physicians to follow him to conserve the traditions and the good name of French medicine.

Carbohydrates and Diet in Diabetes.—Desgrez, Bierry and Rathery maintain their conviction that levulose may be much better tolerated than glucose. It has an antiketogenic effect. They find that there is no essential difference between diabetic acidosis and the acidosis of healthy people deprived of carbohydrates. The authors admit that the same diet may cause a different ketogenesis, and attribute this partly to the endogenous supply of glycogen, partly to individual differences in

the capacity of balancing between the ketogenic and antiketogenic substances. The diet has to be balanced accordingly. Vitamins should not be forgotten.

Neuroparalytic Keratitis.—Lagrange describes three cases and concludes from his clinical observations that a coincident affection of the trigeminus and of the ophthalmic ganglion is necessary to cause neuroparalytic keratitis.

Artificial Pneumothorax in Pulmonary Gangrene.—Emile-Weil reviews successful and unsuccessful cases of this operation. No pneumothorax should be tried in cases with purulent complications in the pleura or pericardium. Bilateral lesions are an absolute contraindication. The most favorable localization of the resulting cavity is in the parenchyma near the hilus. Once the cavity is formed, the earlier the treatment, the better the results, although Forlanini's successful case had been ill for six years. Specific antigangrene serum, if used in large quantities, proves very useful.

Bulletin Médical, Paris

Nov. 25, 1922, **36,** No. 48

*Syphilis of the Ear. J. Ramadier.—p. 965.
*Paresthesia in Otorhinolaryngology. P. Aubriot.—p. 969.
Clinical Aspect and Treatment of Venous Complications of Otitis. H. P. Chatellier.—p. 971.

Syphilis of the Ear.—Ramadier reviews the possible localizations of syphilis in the ear. The affection of the middle ear is very important in hereditary syphilis. Acquired syphilis prefers the nervous parts. The specific neuritis of the auditory nerve may appear sometimes during a general secondary eruption, or at the end of it, although it may come in the tertiary stage. It starts with attacks of tinnitus, rarely dizziness. After a few days, the hearing is impaired, usually in one ear more than in the other. It is typical, that this neuritis is usually dissociated, affecting either the cochlear, or the vestibular portion of the nerve. In the treatment, the so-called neurorecidives have to be avoided by using mercury at the start and progressively increasing amounts of arsphenamin derivates.

Paresthesia in Otorhinolaryngology.—Aubriot analyzes these phenomena and considers their foundation, which can be either an illusion derived from a minimal anatomic lesion, or an hallucination. In both cases there is no proportion between the stimulus and the psychic reaction. Such a meagre grain can develop so strongly only on an abnormal soil. The patients are usually very eloquent. The most common complaints are the feeling of a foreign body, dryness, phlegm, burning, and constriction. A careful examination is necessary to eliminate organic lesions like the chronic deep tonsillitis, tuberculous and syphilitic lesions near the tubes.

Bulletins de la Société Médicale des Hôpitaux, Paris

Nov. 24, 1922, **46,** No. 33

Comment on "Calcium Chlorid." H. Barbier.—p. 1540.
*Intoxication with Benzene and Benzin. Duvoir.—p. 1541.
*Benzene Anemia. Faure-Beaulieu and Lévy-Bruhl.—p. 1543.
Symmetric Purpura in a Tabetic with Hodgson's Disease. A. Cain and P. Hillemand.—p. 1544.
Severe Simple Cryptogenetic Anemia Cured by Blood Injections. P. Emile-Weil and P. Isch-Wall.—p. 1547.
Intermittent Biliary Fistula. Carnot and Blamoutier.—p. 1553.
Vaccines in Acute Pulmonary Affections. J. Minet.—p. 1557.
*Paroxysmal Hemoglobinuria. Ardin-Delteil et al.—p. 1562.
*Scopolaminomania. E. D. Paulian and Tomovici.—p. 1567.
Instability Due to Lenticular Nucleus. E. D. Paulian.—p. 1568.

Intoxication with Benzene and Benzin.—Duvoir emphasizes the necessity to distinguish between the cyclic compound benzene and the aliphatic benzin, which is ten times less toxic. Besides, it is necessary to make an exact analysis of the poisoning substance, because there are different amounts of impurities in benzenes, which may be very toxic.

The Toxic Agent in Benzene Anemia.—Faure-Beaulieu and Lévy-Bruhl report a case of anemia due to professional contact (inhalation) of benzene of the highest purity.

Paroxysmal Hemoglobinuria.—Delteil, Derrieu and Azoulay tried without success to influence this condition by repeated intravenous injections of 25 to 40 c.c. of the patient's own serum. Antisyphilitic treatment did not change the positive Wassermann reaction, but the patient after this could be exposed to cold without getting the hemoglobinuria.

Scopolamin Addiction.—Paulian and Tomovici report two cases of scopolaminomania, which may be important because the use of this drug against the sequelae of encephalitis is often deemed necessary. There were no other pathologic symptoms except the craving for the drug.

Presse Médicale, Paris

Nov. 22, 1922, **30,** No. 93

Bronchitis and Catarrhs. F. Bezançon and S. I. de Jong.—p. 1005.
*New Kind of Paraplegia. C. Vincent and E. Bernard.—p. 1006.
*Treatment of Pneumococcus Keratitis. G. Pacalin.—p. 1008.

New Kind of Paraplegia.—Vincent and Bernard describe a case of apparent paraplegia due to a contraction of the anterior tibialis, with spasms similar to Parkinson's disease.

Treatment of Ulcerative Pneumococcus Keratitis.—Pacalin recommends an ointment containing 2 per cent. of ethylhydrocuprein and 1 per cent. of methylene blue. Ethylmorphin should not be forgotten, and atropin must be used, even in cases of marginal ulcers. Its only contraindication is increased intra-ocular pressure. Pacalin does not need to employ the thermocautery since he uses ethylhydrocuprein. A 5 per cent. tincture of iodin is sufficient to touch delicately the ulcer. It is good to wait a moment for the evaporation of the alcohol from the cotton before touching the ulcer. Hot compresses should be applied. Injections of milk are useful, if they raise the temperature.

Annali d'Igiene, Rome

October, 1922, **32,** No. 10

*Epidemic of Typhoid Fever. P. Maione.—p. 793.
*Partial Disinfection of Earth. G. Moreali.—p. 804.
*Experimental Infections Through the Teeth. P. Farina.—p. 810.
Recent Literature on Milk.—p. 816.

Epidemic of Typhoid Fever.—Maione describes an epidemic of forty-six cases of typhoid fever in a community of 940 inhabitants. The outbreak was due to contaminated wells, and appropriate measures were effective.

Partial Disinfection of Earth.—Moreali finds that a 5 per cent. solution of phenol has a partial germicidal power, but it does not allow the isolation of the tetanus bacillus if other sporulating microorganisms are present.

Infections Through the Pulp of Teeth.—Farina produced septicemia by introducing the bacilli of chicken cholera into the teeth of rabbits.

Policlinico, Rome

Nov. 1, 1922, **29,** Medical Section No. 11

*Clinical and Pathologic Study of Botulism. S. Pisani.—p. 567.
*Pseudoleukemia and Osteosclerosis. S. Pastore.—p. 595.
*Thermoprecipitation in Plague. M. Pergola.—p. 610.

Clinical and Pathologic Consideration on Botulism.—Pisani gives the pathologic findings in the bulbar and pontine nuclei and anterior cornua of the spinal cord. He emphasizes the importance of lesions of the parasympathetic system: the greatest lesions of cells are at the level where the autonomous fibers arise. Most of the clinical symptoms, like the abolition of lacrimal, salivary, gastric, bronchial and skin secretions, and absence of the oculocardiac reflex, can hardly be explained otherwise than as a lessened influence of the parasympathetic. Pilocarpin acts very favorably. Only one of the three cases described in detail was fatal.

Pseudoleukemia and Osteosclerosis.—Pastore reviews thirteen cases of other authors and one of his own and confirms the fact that diffuse osteosclerosis is connected with different affections of the blood producing organs.

Thermoprecipitation in Plague.—Pergola shows the superiority of thermoprecipitation in the postmortem diagnosis of

pulmonic plague over the other methods, including experiments on animals.

Nov. 15, 1922, **29,** Surgical Section No. 11

Familial Appendicitis. O. Cignozzi.—p. 585.
Ankylosis of Jaws of Syphilitic Origin. A. Malerba.—p. 591.
Gas Cysts in Intestines. G. Matronola.—p. 610.
Syphilitic Tumor of the Kidney. F. Niosi.—p. 621.
*Blocking the Splanchnic Nerves. B. Quarella.—p. 638.

Blocking the Splanchnic Nerves.—Quarella relates that the effect was perfect in all but one of his twelve cases in which he operated in the abdomen under regional splanchnic analgesia. In the one case in which supplementary ether was required, the extensive cancer was on the lesser curvature of the stomach, and adhesions probably interfered with the diffusion of the anesthetic. He confirms the impression that the surgeon feels as if he were operating on a cadaver. There is no contraction, no shrinking away from the knife; the patient breathes tranquilly and the expression is calm. After the operation the color and pulse keep good, the breathing tranquil, expectoration easy. From the literature, only 10 per cent. at most require a little supplementary anesthetic. The contraindications are those for local anesthesia in general, and inflammatory foci in the region of the celiac plexus. The only danger seems to be that the left renal vein might be injured when the needle is pointed too low down, as this vein passes in front of the body of the second lumbar vertebra. He uses a special needle, with a guide.

Nov. 27, 1922, **29,** No. 48

Anatomy and Physiology of the Temporomandibular Joint. P. Dorello. —p. 1557.
*Diagnostic Pneumothorax. C. Vallardi.—p. 1561.
*Transmission of Sheep-Pox to Man. A. Bevilacqua.—p. 1563.
Chenopodium in Italy. E. Cavazzani.—p. 1565.

Diagnostic Pneumothorax.—Vallardi used artificial pneumothorax for a roentgen-ray diagnosis of echinococcus cysts.

Transmission of Sheep-Pox to Man.—Bevilacqua reports two cases of general infection due to contact with sheep affected with ovinia.

Riforma Medica, Naples

Nov. 13, 1922, **38,** No. 46

Transactions of Congress of Internal Medicine.—p. 1081: Main topics: Anaphylactic Asthma; Icterus; Duodenal Ulcer.

Rivista di Clinica Pediatrica, Florence

September, 1922, **20,** No. 9

*Differential Diagnosis of Rubella. P. Brusa.—p. 513.
*Benzoin Reaction in Young Children. G. Squarti.—p. 535.

Differential Diagnosis of Rubella.—Brusa was impressed with the peculiar leukocyte findings during a small epidemic of rubella. The eruption in some cases suggested measles, in others, scarlet fever, but the course was typical of rubella. In all examined—even during the incubation phase—the blood showed leukocytes with an excentric nucleus, having the chromatin arranged like the spokes of a wheel. There may be one or more nucleoli, and the protoplasm is intensely basophil and vacuolated. They are probably derived from the plasma cells. Cells of this description were never found in measles, scarlet fever or infectious erythema. There seems to be some special irritation of the lymphatic system in rubella, and the effect is more pronounced in cases of the lymphatic constitution and in debility from various toxic and infectious influences. The differential blood counts on different days of the disease are tabulated for comparison. These peculiar cells formed 10.33 per cent. of the leukocytes on the second day in one girl of 4 years who had previously had several infectious diseases. The percentage was 9.33 the fourth day in one infant, and 5.33 in several on the third day. The peak seemed to accompany the enlargement of the glands, which is almost constant in this disease, and reaches its maximum at the third to the sixth day of the eruption.

The Benzoin Reaction in Children.—Squarti gives minute directions for the benzoin test of the spinal fluid, and tabulates the reaction in forty-three children with various brain or meningeal affections, especially inherited syphilis. There was no reaction in the normal or in those with simple hydrocephalus, but with inherited syphilitic meningeal disease the response was very often positive with the weaker dilutions. In all other forms of meningitis the response was negative, or occurred only with the stronger dilutions.

Anales de la Facultad de Medicina, Montevideo

August, 1922, **7,** No. 6

*Calculus in Appendix. A. Navarro.—p. 307.
*Achlorhydria. C. Nario.—p. 316.
*Reflex Abdominal Syndromes. C. Stajano.—p. 323.
Case of Paget's Disease of Bones. J. Nin y Silva.—p. 335.
*Slow Pulse from Extrasystoly. H. J. Rosello.—p. 345.
Syphilis without Primary Chancre. J. May.—p. 353.

Calculus in Appendix.—The man's appendix measured 11 cm. and the calculus weighed 1.4 gm. and was composed of pure cholesterol. The cholesterol content of the blood was within normal range.

Achlorhydria.—In the first of Navarro's three cases the diagnosis had wavered between gallstones and a gastric or duodenal ulcer, but under systematic treatment to supply the lacking gastric and pancreatic juices, the symptoms almost entirely subsided. In the second case the symptoms had led to an operation for supposed duodenal spasm from an ulcer, but the findings were negative, and improvement followed medical treatment with digestive juices. The third patient was a man of 40 with a history of stomach disturbances for fifteen years. He had taken treatment for gastric ulcer without more than temporary relief, and cholelithiasis plus pancreatitis seemed the only explanation until discovery of the achlorhydria. This aggravates disturbances from cholelithiasis or pancreatitis, and correction of the stomach chemistry relieves some if not all of the symptoms. Navarro urges study of the chemistry of the stomach before proceeding to any operation in this region, and especially before and after resection of the pylorus, as a basis for analysis of stomach functions.

Reflex Clinical Picture with Intra-Abdominal Hemorrhage.—Rupture of an ovarian pregnancy and rupture of a blood cyst in the ovary caused sudden, stormy symptoms in the three cases described. The peritoneum was flooded with blood in the first case, but there was not much extravasation in the second, and in the third there had been no hemorrhage, but the same syndrome had been induced in all, and suggested rupture of an extra-uterine pregnancy. The only feature common to all had been the sudden distension of the ovary, that is, sudden distension of its sympathetic network of nerves. And this, Stajano asserts, is responsible by reflex action for the sudden and alarming clinical picture. It is not caused by the intra-abdominal hemorrhage, as usually taught, but by the sudden, violent distension of sympathetic nerve fibers. Every major operation entails a predisposition to such reflex action. It may affect the digestive apparatus, the heart, or the brain. The symptoms from this reflex action may increase in intensity together with the hemorrhage which generally accompanies it. It is important to distinguish between the symptoms for which each is responsible. He has seen a large enema of coffee arrest the reflex clinical picture.

Bigeminal Pulse with False Bradycardia.—The pulsus bigeminus in Rosello's case was due to extrasystoles.

Prensa Médica Argentina, Buenos Aires

Sept. 30, 1922, **9,** No. 12

Pathology of Pituitary Region. C. P. Waldorp.—p. 309. Cont'd.
*Polycystic Kidney. J. Palacio.—p. 318.
*Eosinophilia with Hypertrophied Prostate. Legueu and Astraldi.—p. 324.
*Arsenicals in Treatment of Neurasthenia. R. Ortega Belgrano.—p. 326.

Polycystic Kidney.—Palacio's patient was a man of 36 with numerous evidences of dystrophia from inherited syphilis.

Eosinophilia with Abnormal Prostates. — Legueu and Astraldi report eosinophilia of 1, 2, 3, 4 and even 8 per cent. in ten men with complete retention of urine, treated by an operation on the prostate. The range was similarly high—up to 11 per cent.—in thirteen others with adenomatous prostates, not confirmed by operation. The eosinophilia does not seem to have any connection with the composition of the urine or the size of the prostate adenoma. The mere presence of the adenoma is enough. On the other hand, the number of eosinophils was abnormally low in cases of cancer of the prostate. This may aid in the differential diagnosis.

Arsphenamin in Treatment of Neurasthenia.—Ortega Belgrano believes in striking quick and striking hard in treatment of neurasthenia. Nothing is so well adapted for this, he says, as arsphenamin. He has been using it for this purpose for eight years and here reviews his experiences in this line with 18 women and 24 men. He gives by the mouth the day before and the day of the injection 5 drops of epinephrin solution, two or three times during the day. He then gives a minute dose of the arsphenamin, about 0.05 gm. and gradually increases the amount to a maximum of 0.45. The injection is made intramuscularly or subcutaneously: "The intravenous route is too dramatic for the neurasthenic." The total amount injected varied from 3 to 6 gm. Two months afterward he commences a new series of injections. The results were a complete cure in 30; great improvement in 8, and little benefit in 4, although in this last group he extended treatment to include a third series. The patients threw off their fatigue and their anxious worried mood, and became cheerful and visibly rejuvenated in aspect and functioning.

Oct. 30, 1922, **9**, No. 15

Hydramnion with Twin Pregnancy. J. B. Gonzalez and A. Villa.—p. 409.
*Localization of Tender Points. D. Del Valle.—p. 421.
Volvulus of the Ileum from Diverticulitis. D. S. Cúneo.—p. 424.
Vernes' Flocculation Reaction in Syphilis. J. B. Arizabalo.—p. 426.
Bill to Insure Safe Drinking Water in Factories. E. Catalán.—p. 428.

Improved Technic for Localization of Tenderness.—Del Valle emphasizes the extreme precision as to localization of tender points in the abdomen by gently laying the hand flat on the abdomen, and tapping lightly the knuckle of the flexed forefinger, the elastic hammer striking the knuckle at the tip of the angle of the flexed joint. The skin of the abdomen is not pressed in, but the light tap of the hammer jars the tissues in the depths along the axial prolongation of the terminal and middle phalanges of the finger. When the abdominal wall is pressed in with the finger, as in the usual palpation in the search for tender points, the pressed in wall distributes the effect fan-like over the entire subjacent tissues. With this light percussion localization of the tender point, he was able to differentiate gallbladder disease in a case of chronic dyspepsia, the symptoms pointing only to the stomach, and in acute appendicitis with puzzling symptoms, adnexitis, etc. A few typical cases are described in which this *algesio-localización-percutoria*, as he calls it, alone gave the needed clue. The article is illustrated.

Revista de la Asoc. Méd. Argentina, Buenos Aires

September, 1922, **35**, No. 215

*Gangrene of Lung. A. Bergman.—p. 445.
Radiology of Paget's Disease. C. Donovan.—p. 458.
*Spirochetal Bronchitis. G. Aráoz Alfaro et al.—p. 461.
*Sporadic Acute Myoclonus. A. Bergman.—p. 476.
*Aneurysm of Femoral Vessels. A. N. Sacco.—p. 485.
Pseudomyxoma of Appendicular Origin. O. F. Mazzini.—p. 492.
Diffuse Lipomatosis in Man of 55. L. Ayerza and I. Hernández.—p. 500.
*Cleavage Between Colon and Omentum. A. Gutiérrez.—p. 505.
*Resection of Duodenal Ulcer. N. Tagliavacche.—p. 515.
*Extreme Gastroptosis. A. Gutiérrez.—p. 517.
The Question of Appointments to Hospital Services.—p. 523, and p. 535.
Epithelioma of Accessory Lacrimal Gland. A. Natale.—p. 545.
Hole in the Macula. E. de la Vega.—p. 548.
Chronic Poliomyelitis. J. A. Esteves.—p. 553.
Pathologic Anatomy in Case of Mongoloid Idiocy. R. Sánchez Elía.—p. 561.
Tumor in Occipital Lobe. J. M. Obarrio.—p. 564.
Rare Case of "Stereotype Movements." F. Morixe.—p. 578.

Gangrene of the Lung.—Bergman discusses the peculiar bacteriologic findings in a case of gangrene following influenza in a man with syphilitic lesions in the lung.

Spirochetal Bronchitis.—In one of four cases described, the spirochetal process had involved the lung, and the severe clinical picture had been that of pulmonary tuberculosis for seven months, with night sweats, loss of 8 kg. in weight, and blood-streaked sputum. The onset had been stormy, with fever, chills and incessant cough. In some of the cases, old alveolar pyorrhea had preceded the bronchitis. Subcutaneous inoculation of sputum in guinea-pigs induced a typical abscess swarming with the Castellani spirochetes and fusiform bacilli. Mixed treatment with mercury and neo-arsphenamin was promptly effectual.

Sporadic Myoclonus.—The man of 32 developed suddenly an acute multiple infectious myoclonus. The onset, he said, was like an electric shock. By the next day he was unable to control his legs. The course of the disease was a little less than three weeks, recovery being apparently complete. No relief was obtained from bromids and chloral or suggestion.

Traumatic Femoral Aneurysm.—When Sacco operated on the arteriovenous aneurysm it was "dead." The case was peculiar further in that the extensive aneurysm had not caused any symptoms, attracting the young man's attention to his leg, for eight months after the trauma. The sac resected was 17 cm. long and 14 cm. wide at its largest point. The whole of that leg had been much larger than its mate, but it subsided to normal circumference in a month or two after the operation.

Cleavage Between Colon and Omentum.—Gutiérrez explains the mechanism and the advantages of detaching the secondary union which interferes with posterior gastro-enterostomy.

Resection of Duodenal Ulcer.—Tagliavacche resected the duodenal ulcer during an operation for removal of the gallbladder, and did not attempt gastro-enterostomy. The cure has been complete during the five years to date.

Gastrectomy for Gastroptosis.—The disturbances from the extreme gastroptosis had been so severe that the man of 28 contemplated suicide. Six months after the almost total gastrectomy, he had gained 12 kg. in weight and had had no return of his previous disturbances.

Revista Española de Medicina y Cirugía, Barcelona

August, 1922, **5**, No. 50

*Malta Fever. A. Salvat Navarro.—p. 433.
*Support for Operations on the Kidney. M. Serés.—p. 440.
*Cerebrospinal Rhinorrhea. G. Roqueta.—p. 442.
Roentgenotherapy for Laryngeal Cancer. A. Battlés.—p. 449.
Formaldehyd in Serodiagnosis of Syphilis. P. González and M. Armangué.—p. 451.
Recent Works on Neurology. J. Vilató.—p. 453.

Malta Fever.—Salvat remarks that the differential diagnosis of Malta fever is very difficult from clinical examination alone. He advises to examine the blood for agglutination and fixation of complement as well as for the micrococcus. It may be necessary to inoculate several plates or slanting tubes; he prefers an agar culture medium with a little sugar, and says that it is best to draw the blood when the fever is at its height. Malta fever meningo-encephalitis is usually recognized only by some casual hint. Duran de Cottes insists on the differential value of the local reaction to intradermal injection of a few drops of an emulsion or autolysate of the killed micro-organisms. Intense hyperemia follows in three or four hours, and may resemble an erysipelatous patch. The ophthalmoreaction is less certain. In dubious cases, inquiry as to prevailing morbidity among goats may give the clue.

Serés' Support for Kidney Operations.—Serés insures the absolute immobility of the patient by having him lie on his side on a broad and high wooden bolster in which a deep, broad transverse groove is hollowed out. The trunk lies in this groove which holds it firm in the region of the kidneys, while the exposed side bulges upward. The arms and legs are free. More than 400 operations on kidneys with this *soporte-fijador* have amply confirmed, he says, its superiority to the usual arrangements for operations in the lumbar region. Illustrations accompany his description.

Cerebrospinal Rhinorrhea.—In one of Roqueta's three cases the woman's intense headaches stopped when the profuse discharge from one side of the nose began. The vomiting and dizziness were also much improved, but all returned with the same intensity when the rhinorrhea was temporarily arrested. They subsided anew when the flow was restored. The woman was syphilitic, and her physician insisted that the rhinorrhea was of nasal origin, from excessive treatment for the syphilis. In the second case there had been hydrocephalus since meningitis in childhood. Whenever the profuse rhinorrhea was arrested, severe cerebral symptoms developed. Both these patients died in a few months or years.

Deutsches Archiv für klinische Medizin, Leipzig

Nov. 2, 1922, **140**, No. 5-6

*Flora of Human Intestines. L. Bogendörfer.—p. 257.
*Sequelae of Epidemic Encephalitis. F. Palitzsch.—p. 271.
*Blood Serum and Quantitative Analysis. G. Leendertz.—p. 279.

*Research on Extrasystoles. B. Kisch.—p. 286.
*Uric Acid in Blood in Nephritis. G. Czoniczer.—p. 289.
*Urobilin. A. Adler.—p. 302.
Polyglandular Syndromes. S. Hirsch.—p. 323.
*Pellagra. A. Lustig.—p. 342.
*Pressure on Veins in Baths. E. Schott.—p. 358.
*Action of Iodids on Blood Viscosity. G. Deusch and B. Frowein.—p. 377.

The Micro-Organisms of the Human Intestine.—Bogendörfer examined the contents of the ileum with Ganter's apparatus. At a distance of from 1 to 2.5 meters from the pylorus, two kinds of diplococci were found in healthy persons. The colon bacillus was never discovered above a point 2.5 meters below the pylorus. Short gram-negative and long gram-positive bacilli and other micro-organisms were cultivated from some subjects, but the number was small. In pathologic cases, especially with anacidity of the stomach, micro-organisms which usually are found only in the colon were discovered in the small intestine. They may be present, however, even with hyperacidity.

Sequelae After Epidemic Encephalitis.—Palitzsch reviews the outcome in forty cases of encephalitis: 22.5 per cent. died; 15 per cent. were incapable of any work; 17.5 per cent. had impaired earning ability; 25 per cent. were able to work in spite of some sequelae, and only 20 per cent. recovered.

Blood Serum and Quantitative Analysis.—Leendertz compared the amount of protein in the serum resulting from clotting of whole blood with that of the serum resulting from clotting of plasma. He found that the serum from whole blood contains less protein. This is due to the migration of salt solution from the corpuscles. The serum is therefore not suitable for very exact quantitative determinations. The usual method of estimating the fibrinogen from the difference between the proteins of plasma and the proteins of serum is misleading if the serum was obtained from the whole blood.

Research on Extrasystoles.—Kisch discusses the mechanism of interpolation of auricular contractions in connection with automatism of the ventricles.

Uric Acid in Blood in Diagnosis and Prognosis of Nephritis.—Czoniczer in thirty-six cases with uric acid content exceeding 3.5 mg. in 100 c.c. of blood, always found more than 50 mg. of nonprotein nitrogen. He believes he is justified in concluding from these thirty-six severe cases that a lower uric acid content excludes nephrogenous nitrogen retention. Amounts exceeding 9 mg. give an extremely bad prognosis. The uric acid in the blood was increased in cases of pseudo-uremia with retention of small amounts of nitrogen. He admits that the method has no value in gout, but gives no directions for excluding this diathesis, which is not an uncommon basis for nephritis.

Urobilin.—Adler examined healthy and sick persons with his quantitative modification of Schlesinger's test. In healthy persons, 20 to 25 mg. of urobilin are excreted in twenty-four hours. Ingestion of proteins increases urobilinuria, as does hunger. A heavy protein meal after hunger yields large amounts. In pathologic cases the amount excreted in the morning is higher, and protein food increases it very strongly. In cirrhosis of the liver and cases of severe hepatitis, 1 gm. of urobilin may be excreted in twenty-four hours. Pneumonia, scarlet fever, typhoid, severe tuberculosis may yield 0.6 gm. In hemolytic icterus 0.3 to 0.4 gm. is excreted and it may be increased by injecting epinephrin. In pernicious anemia between 30 and 50 mg. may be excreted. Urobilinuria is the most sensitive indicator of retention of bile in the blood.

Pellagra.—Lustig reports the results of investigations made by the official Italian commission since 1910. All the theories presented were controlled. They conclude that corn is the responsible factor. Possibly this is effective by reason of the low content of protein and vitamins in the corn diet of the peasants.

Pressure on Veins in Baths.—Schott demonstrates that the mere hydrostatic pressure of the water can increase the venous pressure sufficiently to stimulate the heart. This may be an additional factor in the therapeutic action of baths.

Action of Iodids on Blood Viscosity.—Deusch and Frowein find that inorganic preparations of iodin do not lower the protein content of the serum, as do preparations from the thyroid gland. The viscosity of the blood did not parallel the changes in the protein content.

Deutsche medizinische Wochenschrift, Berlin

Nov. 24, 1922, **48**, No. 47

*Poliomyelitis in Marburg. E. Müller.—p. 1569.
Untoward Effects of Disinfection of Hands with Denatured Alcohol. E. Payr.—p. 1572.
*Periarterial Sympathectomy. F. Brüning.—p. 1572.
*Future of Roentgen Rays. O. Strauss.—p. 1575.
*Permanent Slow Irrigation in Puerperal Fever. A. Wagner.—p. 1577.
Intraperitoneal Infusions. Weverinck.—p. 1577.
*Dilution of Milk in Infant Feeding. J. Levy.—p. 1578.
Venesection in Infants. F. Rohr.—p. 1579.
Freeing Cowpox Lymph from Microbes. A. Groth and K. Arnold.—p. 1580.
Yeast and Yeast Extract and Its Taste. T. Sabalitschka.—p. 1582.
The Uncomplicated Abortion. M. Henkel.—p. 1583.
Examination of the Nose. Finder.—p. 1585.
Birth and Death Rate of Children in East Africa. R. Lurz.—p. 1588. Cont'n.
Distress of Physicians and Compulsory Sickness Insurance. Stier-Somlo.—p. 1588.

Poliomyelitis in Marburg.—Müller discusses chiefly the epidemiologic moments. The disease is transmitted mostly by healthy carriers, who cannot be isolated. The final disinfection of the house is, therefore, rather a sort of psychotherapy than a preventive act.

Periarterial Sympathectomy.—Brüning found that the spasm of arteries reaches sometimes up to the axillary artery from the periphery. Jaboulay-Leriche's operation consists in removing the adventitia of the artery for the length of about 8 cm. This has to be done as high as possible, to avoid anastomoses. It is indicated in all the vasomotor-trophic neuroses which are accompanied by angiospastic conditions, like acroparesthesias, Raynaud's disease, acro-asphyxia, and eventually scleroderma. It is contraindicated in embolic and diabetic gangrene.

Changes and Future of Roentgen-Ray Treatment.—Strauss postulates an investigation of the question, whether we should use as high doses in the postoperative treatment, as for the treatment of the primary tumor.

Permanent Irrigation in Puerperal Fever.—Wagner recommends in puerperal fever permanent irrigation of the diseased part (perineum, vagina or uterus), and attributes the good results simply to the drainage.

Dilution of Milk for Infants.—Levy demonstrates on 195 cases that even in the first three months, a more concentrated (two thirds) milk is better tolerated, than milk which has been diluted to one half.

Klinische Wochenschrift, Berlin

Nov. 25, 1922, **1**, No. 48

*Pathology of Eclampsia. T. Fahr.—p. 2361.
*Clinical Aspect of Eclampsia. T. Heynemann.—p. 2363.
*Ferments in Blood. P. Rona, H. Petow and H. Schreiber.—p. 2366.
*Pneumococci in the Healthy and Sick. A. Seitz.—p. 2367.
*Hypoglycemia After Rectal Infusions of Sugar. Rubino and Varela.—p. 2370.
*Elimination of Spleen. E. Seifert.—p. 2374.
Methods to Stop Bleeding. L. König.—p. 2376.
Potato Flour for Infants. E. Müller.—p. 2378.
*Influence of Drugs on Urethral Glands. A. Perutz.—p. 2381.
*Blood Changes in Cancer. H. A. Dietrich.—p. 2382.
Needle Electrodes in Electrocardiography. H. Sachs.—p. 2383. Reply. W. Straub.—p. 2383.
*Alimentary Hyperglycemia and Glycosuria. C. Traugott.—p. 2384.
*Quinin and Hemoclasis. M. Grossmann.—p. 2385.
Artificial Segmentation of Mammalian Ovum and Its Significance for Extra-Uterine Gravidity. J. Novák and K. Eisinger.—p. 2385.
Traumatic Sarcoma. K. Philippsberg.—p. 2385.
Intermittent Claudication of Aorta and Its Branches. Mendel.—p. 2386.
Otogenous and Rhinogenous Purulent Meningitis. Fleischmann.—p. 2386.
The German Museum of Hygiene. M. Vogel.—p. 2389.

Pathology of Eclampsia.—Fahr recapitulates the pathologic findings in eclampsia and emphasizes especially the changes in the glomeruli described by himself, independently of Löhlein, two years ago. Fahr admits that the changes in kidneys and liver are probably in part due to the spasm of arteries, but believes that there is also a toxic factor and a factor leading to formation of thrombi.

Clinical Aspect of Eclampsia.—Heynemann reviews the theories and emphasizes the spastic changes which can be directly observed in the capillaries of the skin. The non-

protein nitrogen in the blood is usually but little increased. Fifty per cent. of the cases with signs of destruction of red cells (hematin, bilirubin) die. An increased diuresis has a good prognostic significance, but one can be never sure in eclampsia. A forced delivery can hurt the patient. If the attacks occur during delivery, it is necessary to finish it quickly. Forceps may be required. In the first delivery a cervical cesarean section may be necessary. Lumbar puncture sometimes influences the cerebral symptoms favorably, but entails death in other cases. A venipuncture (500 c.c.) is beneficial, and it should be repeated if necessary. Intravenous injections may harm the patient. Eclampsia is extremely rare in cases where a nephritis of pregnancy was correctly treated.

Diagnosis of Disease of Organs from Their Ferments in the Blood Serum.—Rona, Petow and Schreiber utilized Rona and Pavlovic's experience that the lipase which is extracted from the liver, is not changed by quinin, which destroys the lipase of normal serum. They were able to demonstrate by this means that, in cases of mechanical icterus, a quinin-resistant lipase appears in the serum in addition to the normal ferment. A similar ferment originating perhaps in the kidneys may circulate in the blood in cases of kidney disease. Since Rona and Pavlovic found that the lipase from the pancreas is resistant to atoxyl, one can hope to use this method for disease of the pancreas.

Pneumococci in the Surroundings of Healthy and Sick Persons.—Seitz examined the pneumococci and streptococci from the sputum in pneumonia cases and from persons who were in contact with them. Considering the serologic types of pneumococcus, he found distinct relations. He admits that it would be useless to make ordinances against these carriers, but he believes very much in the good results of education of the public on the dangers of transmission.

Hypoglycemia After Rectal Infusions of Sugar.—Rubino and Varela made very slow rectal infusions of small quantities of sugar. The threshold for sugar excretion was lowered. If the infusion was very slow, the sugar level in the blood fell in most cases. If similar symptoms occur after giving glucose by mouth, it is considered by them to be a sign of insufficiency of the liver. Rectal and intravenous injections of sugar, as a rule, cause a decrease in leukocytes and changes in blood concentration which do not parallel the changes in the sugar level of the blood.

Compensatory Phenomena After Loss of Spleen.—Seifert found that the proliferating reticulo-endothelial system of the liver of splenectomized mice is capable of accumulating injected corpuscular elements, although, quantitatively, the function is not so extensive as in Kupffer's cells. The same cell may contain at the same time different substances, and it is impossible to block these cells against subsequent injections.

Innervation and Influence of Drugs on Urethral Glands.—Perutz injected different substances into the urethra, and examined their action on Cowper's and Littré's glands. These glands behave like most others: Pilocarpin and epinephrin stimulate secretion; atropin inhibits the action of pilocarpin, but not of epinephrin. Perutz found it advantageous to inject pilocarpin in the urethra; 20 c.c. of a solution of 0.05 gm. in 200 c.c. of water, kept for from ten to fifteen minutes in the urethra, was usually sufficient. It is rarely necessary to use the double concentration. He finds that it is a good method to prove the presence of gonococci in chronic cases.

Blood Changes in Cancer.—Dietrich found that serum from cancer patients inhibits the hemolysis by sodium taurocholate less than does normal serum.

Alimentary Hyperglycemia and Glycosuria. — Traugott found that diabetes can be excluded if 100 gm. of sugar, taken one hour after ingestion of 20 gm., does not produce hyperglycemia. If it does, this is not a certain proof of the existence of diabetes, because neurotic persons may behave in similar manner.

Quinin and Hemoclasis.—Grossmann finds that intravenous injection of 0.2 gm. of hydrochlorid of quinin causes leukopenia in all cases with liver affections. The differential leukocyte count does not change, and he attributes the phenomenon to a retention of leukocytes in the visceral capillaries.

Medizinische Klinik, Berlin

Nov. 26, 1922, **18,** No. 48

*Vegetative System and Individuality. F. Kraus.—p. 1515.
*Constitutional Paradoxic Pulse. H. Curschmann.—p. 1521.
Cases of Dystonia and Spasm of Muscles of Neck. E. Maliwa.—p. 1522.
*Typhoid Abscess of the Spleen. K. Paschkis.—p. 1523.
*Nasal Breathing and Treatment of the Lungs. G. Wotzilka.—p. 1525.
*Syphilis of Suprarenals. W. H. Crohn.—p. 1526.
Local Mercurial Treatment of Varices. J. Rosner and E. Wohlstein.—p. 1527.
*Regulation of Placental Circulation. W. Schmitt.—p. 1528.
Cysticercus of the Brain as a War Injury. W. Jacobi.—p. 1529.
Diseases of Penis. E. Portner.—p. 1531.
Survey of Syphilis. F. Pinkus.—p. 1533.

Vegetative System and Individuality.—Kraus understands by the vegetative system the surfaces and structures of protoplasma which belong to the colloid electrolytes and the crystalloid electrolytes, buffers, hormones—the "lubricants of the system"—catalyzers, and the regulatory influence of the vegetative nervous system on them. This system is the uniting link between organs and personality. The paper is full of original views, and a discussion of it by Kraus' pupils is given on page 1539 of the same number of the *Medizinische Klinik*.

Constitutional Paradoxic Pulse.—Curschmann agrees with Schmidt that it is a mistake to attribute the paradoxic pulse to an adhesive pericarditis. He believes that it may be due to a compression of the subclavian artery by the presence of a scalenus minimus muscle in persons with a low blood pressure.

Typhoid Abscess of the Spleen.—Paschkis reports a case of subphrenic abscess originating in the spleen in a patient who had suffered from polyarthritis. Typhoid bacilli were found in the abscess. He discusses the possibilities of typhoid arthritis and the pyogenic action of typhoid bacilli.

Nose Breathing and Treatment of the Lungs. — Wotzilka believes that obstruction of the nose predisposes to tuberculosis, because the breathing becomes shallower and the lymphatic current therefore slower. One part of prophylactic treatment of tuberculosis should consist in making the upper respiratory passages free.

Syphilis of Suprarenals.—Crohn's patient presented all the signs of Addison's disease in a 12 year old boy with positive Wassermann reaction. He was cured by specific treatment.

Regulation of the Circulation in the Placenta.—Since no nerves have been found as yet in the vessels of the placenta, it seems evident that their action is regulated directly. Schmitt finds that they dilate when oxygen is lacking and contract if its supply is good.

Münchener medizinische Wochenschrift, Munich

Nov. 10, 1922, **69,** No. 45

Estimation of Disability Due to Sequels of Epidemic Encephalitis. W. Villinger.—p. 1561.
*The Hair of Cancer Patients. H. Schridde.—p. 1565.
*Prevention of Serum Sickness. R. Kraus.—p. 1566.
Köhler's Disease. Sonntag.—p. 1567.
*Treatment of Polycythemia Rubra. K. Gutzeit.—p. 1569.
*Roentgenotherapy in Tuberculosis of the Larynx. L. Rickmann.—p. 1572.
*Treatment of Epiphora. Hensen and Lorey.—p. 1573.
*Metal Guide in Duodenal Tube. S. Bondi and F. Eisler.—p. 1573.
*Infiltrates Due to Arsphenamin. G. Klein.—p. 1574.
Acute Arsphenamin Injuries from the Standpoint of the General Practitioner. G. Fant and Kreibich.—p. 1574.
Further Evidence that Syphilis in the First Stage Can be Completely Cured by a Single Serial Treatment with Neo-Arsphenamin. W. Morath.—p. 1575.
Secondary Suppurations. G. Ledderhose.—p. 1576.

Gray Hair and Cancer Patients.—Schridde does not confirm the old belief that gray hair is rare in persons predisposed to cancer, but found other interesting changes, which he considers so typical, that he was able to make the diagnosis before starting a postmortem. He finds that among the dark, gray or blond hair of the parts exposed to light (scalp, beard, brows, and especially the temporal region) there are always in such cases purely black hairs, void of luster and more rigid than normal hair. On white paper, they look like lines drawn with India ink. They do not occur in red-haired people. Schridde finds that an abnormal pigmentation of the skin was present in all cases of cancer. These changes do not seem to be present in sarcomas.

Prevention of Serum Sickness by Means of Heterologous Antigens.—Antitoxic serum prepared from cattle does not cause the immediate serum sickness, like horse serum, even on reinjection, except in cases where horse serum had been used before. Yet horse serum may be used for the second injection after using beef serum for the first. The disadvantage lies in the lower antitoxic titer of beef serums. Kraus proposes the exclusive use of beef serums for prevention of diphtheria and tetanus, especially in the application of toxin-antitoxin mixtures. Wherever one uses horse serum in curative treatment, one should inject normal beef serum first, to prevent serum sickness.

Treatment of Polycythemia Rubra.—Gutzeit saw transitory remissions after the use of phenylhydrazin and benzene. Venesections are good. Quinin and arsenic are of no use. Irradiation of bones by large doses of roentgen rays gives the best results. The treatment has to be controlled by the changes in the leukocytes and the general state of the patient.

Roentgenotherapy in Tuberculosis of Larynx.—Rickmann reports excellent results in twelve cases of beginning laryngeal tuberculosis. In other cases he combines it with other methods. Four cases were unfavorably influenced. The dose has to be small (irritating, not destroying).

Roentgen Irradiation of Lacrimal Glands.—Hensen and Lorey report favorably on the results of this with improved technic in epiphora.

Sounding of the Duodenum.—Bondi and Eisler use the duodenal tube with a mandrin, which makes it half rigid. One can introduce it under roentgen control in a few seconds into the duodenum.

Injections of Glucose in Infiltrates.—Klein injects in cases of beginning infiltrates after arsphenamin once or twice 20 c.c. of a 50 per cent. solution of glucose intravenously. If possible, he selects the vein which was used for the arsphenamin. It helps in many, though not all cases.

Wiener klinische Wochenschrift, Vienna

Nov. 16, 1922, **35,** No. 46

Left-Handed Children. R. Neurath.—p. 895.
*Wildbolz' Reaction in Tuberculous Meningitis. K. Kundratitz and F. Schenk.—p. 900.
*Sedimentation of Blood in Arthritis. A. Simó.—p. 901.
*Treatment of Abortion. Wagner.—p. 902.
*Treatment of Gonorrheal Epididymitis. E. Radnai.—p. 902.
Comment on Starlingers' Article in No. 42. W. Pewny.—p. 903.
Practical Hygiene of Breeding. S. Weiss.—p. 903.

Wildbolz's Reaction in Tuberculous Meningitis.—Kundratitz and Schenk tested the cerebrospinal fluid in fifteen cases of tuberculous meningitis with Wildbolz's urine concentration method. The results were practically negative, although they employed great care in concentrating the fluid, and injected it not only in the patient, but also in other individuals.

Sedimentation of Blood in Arthritis.—Simó examined the speed of sedimentation of erythrocytes in fifty different cases of arthritis. The speed is increased in tuberculous and rheumatic arthritis, and seems to depend, to a certain extent, on the size and activity of the inflammation. Deforming arthritis does not increase much the speed of sedimentation.

Treatment of Abortion.—Wagner favors active treatment, but it has to be done delicately.

Treatment of Gonorrheal Epididymitis.—Radnai reports two cases which were very favorably influenced by a few intravenous injections of 10 c.c. of a 10 per cent. solution of calcium chlorid.

Nov. 23, 1922, **35,** No. 47

*Acute Hemorrhage from Stomach and Duodenum. H. Finsterer.—p. 913.
*Motor Function of Stomach with Duodenal Ulcer. T. Bársony.—p. 916.
Puerperal Occlusion of the Mesenteric Vessels. Bucura.—p. 918.
Roentgen Diagnosis of Benign Tumors of Stomach. Z. Kalisch.—p. 921.
French Views on Icterus. F. Stohr.—p. 922.

Surgical Treatment of Acute Hemorrhages from Stomach and Duodenum.—Finsterer found in Vienna among 1,262 necropsies presenting ulcer of stomach or duodenum, 301 perforations and 190 deaths due to hemorrhage from arrosion of an artery. He does not believe that the mortality in operative cases is in reality much higher than in cases treated internally. If one would count only the severest hemorrhages treated internally, and compare them with Finsterer's unusually favorable results (19.6 per cent. mortality in fifty-one operative cases, of which only a part was operated on early), one could consider, according to the author, his results as 5 per cent. superior.

Motility of Stomach Induced from Duodenum.—Bársony finds that it is superfluous to suppose some influence of the pneumogastric nerve in the pathogenesis of increased tonus, peristalsis and local spasms of the stomach in cases of duodenal ulcer. These symptoms can be explained sufficiently by Bayliss and Starling's law: Increased contractions occur only in the segment of the irritation and orally from it. Aborally, there is a loss of tonus. This second part of Bayliss and Starling's law is confirmed in these cases by the atony of the duodenum or its bulbus, distal from the ulcer.

Nov. 30, 1922, **35,** No. 48

*Roentgen Ray Treatment of Peritoneal and Genital Tuberculosis in Women. W. Weibel.—p. 933.
Changing of the Depressive Action of Saccharin on the Heart into an Irritating Action. M. Heitler.—p. 935.
*Chronic Gonorrhea in Women. Matzenauer and H. Weitgasser.—p. 937.
*Indications for Intensive Roentgen Ray Treatment. L. Freund.—p. 939.

Roentgen-Ray Treatment of Peritoneal and Genital Tuberculosis in Women.—Weibel recommends roentgen ray only in the adhesive form of tuberculous peritonitis. He saw better results in genital tuberculosis.

Cupping Glass in Treatment of Chronic Gonorrhea.—Matzenauer and Weitgasser report very favorably on the results of the repeated application of a vacuum glass to the uterine cervix for fifteen or thirty minutes.

Indications for Intensive Roentgen-Ray Treatment.—Freund shows that the warnings given by Holzknecht are practically identical with Freund's views of twenty-five years ago.

Zeitschrift für Krebsforschung, Berlin

Nov. 25, 1922, **19,** No. 4

*The Cure of Cancer. O. Strauss.—p. 185.
Spontaneous Tumors in Wild Rats. M. Beatti.—p. 207.
Tumors of Human Nervous System. M. Beatti.—p. 209.
*Relations Between Cancer and Nerve Substance. C. S. Engel.—p. 215.
External Pendulous Fibromyoma of the Stomach. Kratzeisen.—p. 227.
Plastic Mastitis with Cancer of Stomach. H. Stahr.—p. 231.
*Statistics of Malignant Tumors. H. Petzold.—p. 245.
*Catalase in Blood in Cancer. Zerner.—p. 263.

The Cure of Cancer.—Strauss discusses the problem of curing cancer. We are as yet not able to do much in the way of prevention. Not only a predisposition but also exogenous factors are necessary for the development of cancer. Cancer is not merely a local disease, and, therefore, good results will be obtained only when it is possible to influence the whole organism after local removal of the growth. The roentgen rays act only on the most disperse phase of the tumors. Strauss hopes that a combination of roentgen rays with chemotherapy (iodin, arsenic, silver) after the operation may improve the results.

Relation Between Development of Cancer and Nerve Tissue.—Engel reviews some interesting findings on the importance of nerves for regeneration of the organs of lower animals. Several authors have pointed out that a connection may exist between the nervous system and the development of cancer. Engel emphasizes the fact that the chemical irritants inducing cancer have an affinity for lipoids, and therefore for nerve substance.

Statistics of Malignant Tumors.—Petzold gives a good statistical review of 159 malignant tumors and their metastases found among 1,648 necropsies made in the years 1914-1918 in a hospital (Kiel).

Catalase in Blood in Cancer.—Zerner finds that the lowering of the amount of catalase in the blood in carcinoma is valuable, especially in differential diagnosis from pernicious anemia.

Zentralblatt für Chirurgie, Leipzig

Nov. 18, 1922, **49,** No. 46

Differential Diagnosis of Gastric Ulcer and Cancer. Payr.—p. 1706.
Remarks on "Traumatic Hydronephrosis." A. Troell.—p. 1712.
Pathologic Outward Rotation of Hip-Joint. Loeffler.—p. 1715.
Warning Colors for Poisonous Alkaloids. W. Köhler.—p. 1717.
As to the Priority of Semmelweis or Lister. W. v. Brunn.—p. 1719.

Nov. 25, 1922, **49**, No. 47

*Spondylopathia Leukaemica. E. Melchior.—p. 1737.
Mechanics of Introduction of Gastroscope into Esophagus. Sternberg. —p. 1741.
A Peculiar Case of Contrecoup. S. Lindqvist.—p. 1744.
Ludloff's Operation for Hallux Valgus and Pes Cavus with Hammer Toe. J. Fraenkel.—p. 1745.
Reply to "Hypospadias Operation." A. Fischer.—p. 1748.

Acute Leukemia Simulating Tuberculous Caries of Spine.—Melchior reports in detail a case to show that, in the differential diagnosis of tuberculous spondylitis, acute lymphatic leukemia must be considered. A boy, aged 11, was referred to the hospital with a tentative diagnosis of tuberculosis of the spine. The lumbar spine was contracted and in the lower portion there was a marked localized sensitiveness to pressure and to tapping, together with severe pains. A roentgenogram showed spina bifida at the fifth lumbar vertebra. In spite of the absence of deformity and of pronounced changes in the vertebrae, and because evidence of a different etiology was absent, the diagnosis of tuberculosis of the spine was made and, soon after, osteoplastic spondylopexy by the Albee method was carried out. The course was at first undisturbed; but fever set in from infection of the incision in the back, and a large amount of seropurulent, exceedingly hemorrhagic fluid was evacuated, from which a hemolytic staphylococcus was cultivated. The implant was eventually expelled. The wound showed no tendency to heal. The patient gradually declined and developed epistaxis, bleeding of the gums, petechiae and pains in the spleen region. This was thought to be due to sepsis, until finally a blood examination showed acute lymphatic leukemia (5,600 white blood cells, 40 per cent. of which were lymphocytes, 3 per cent. neutrophils, 4 per cent. eosinophils, 50 per cent. lymphoblasts, and 3 per cent. myelocytes). The hemorrhagic diathesis (hematemesis) developed further; extreme thrombopenia (up to 2,000) and anemia set in, and the leukocyte count rose to more than 27,000. Death finally ensued after a total five months' course. No trace of tuberculosis was found at necropsy, and the vertebrae were externally intact. The lymphatic infiltration of the marrow had entailed softening of the spongiosa. In a similar case of acute leukemia simulating Pott's disease, published in 1914, the boy aged 5 had had a plaster jacket applied on account of the pains and localized stiffness of the spine. It relieved the pains but the acute leukemia continued its fatal course. The two cases teach the necessity for examining the blood even in surgical affections.

Zentralblatt für Gynäkologie, Leipzig

Nov. 25, 1922, **46**, No. 47

Icterus Neonatorum. G. Linzenmeier.—p. 1873.
*The Hemoclastic Crisis in Pregnancy. G. Kaboth.—p. 1883.
*Treatment of Infectious Processes in Abdomen. Pribram.—p. 1889.
Development of New-Born in Postwar Period. G. Pribram-Rau.—p. 1894.
Rupture of Symphysis Intra Partum. R. Hornung.—p. 1898.
"Effect of Camphor on the Nursing Breast." Temesváry.—p. 1901.

Testing of Liver Functioning in Pregnancy by the Hemoclastic Crisis.—Kaboth tested liver functioning by the Widal method in thirty-two healthy pregnant and in eighteen healthy nonpregnant women. The positive Widal reaction (sudden leukopenia) occurred in 56.2 per cent. of the pregnant and in 16.7 per cent. of the nonpregnant women. In the majority of the cases the figure found after the first twenty minutes showed, in comparison with later values, the greatest difference from the original leukocyte figure. This value was therefore considered chiefly. The original value was generally reached again after two hours. In more than half of the cases, after a few days, a second and, in some cases, a third and fourth examination was made. In 26 per cent. of the cases the results of the later tests were materially different from those of the first. This fact lessens considerably the clinical value of the method.

Treatment of Infectious Processes in the Abdominal Cavity.—Pribram, after thirteen years' experience in surgery and World War service as chief of a surgical unit, holds that the advantages of primary closure of the peritoneal cavity without drainage are exceedingly great. Quite aside from the shortening of the patient's confinement in the hospital and the resulting reduction of postoperative thromboses, the danger of extensive adhesions, which after drainage (especially with strips of gauze) are unavoidable, is very much lessened, though some adhesions may still occur. If we consider how many patients suffer during the balance of their lives from great discomfort, and submit to repeated operations, usually without securing permanent relief, we must realize the importance of restoring immediately the physiologic relationships of the peritoneal cavity.

Japan Medical World, Tokyo

November, 1922, **2**, No. 11

*Artificial Production of Tumors in Viscera. Y. Kazama.—p. 309.
*Phagocytosis of Pus Cells. R. Umemura.—p. 312.
Relation of Immunity with Bacteriolysinfast Tubercular Bacilli. S. Toyoda and E. Yo.—p. 316.
Experimental Infections on Human Body with Ascarides. S. Koino.—p. 317.

Artificial Production of Tumors.—As the result of study of intestinal carcinoma in schistosomiasis japonica, Kazama came to a firm belief that that stimulus can be one of the causes of cancer formation. Based on this belief he has been trying since 1919 to produce tumor formation on the mucous surface of viscera by action of various stimuli. He has succeeded in producing adenomatous cancer in the gallbladder of guinea-pigs. When the surface of the mucous membrane of the stomach, urinary bladder or gallbladder of the rabbit or guinea-pig is mechanically or chemically irritated, or both combined, for a certain period of time, there form polypous, papillous or adenomatous growths or even adenoma or adenocarcinoma at the places where the stimulation was applied the most. Metastases form from the malignant new growth.

Phagocytosis of Pus Cells.—Umemura asserts that the pus cell is living and has phagocytic action. It has movement, and reduces methyl blue. The phagocytic action of pus cells decreases with the time. At 37 C. it disappears or is reduced to a half in six hours. The phagocytic action is reduced to one half at 45 C. or at freezing point; at 15 C. it is only one half or one fifth. The phagocytic rate of pus cells is between 0.1 and 15 per cent. The phagocytic action of pus cells is accentuated in normal serum. Activated pus fluid accentuates the phagocytic action of pus cells, while inactivated pus fluid loses the action. When normal serum is added as complement, the action is recovered. The dilution of pus fluid reduces the phagocytic action.

Hospitalstidende, Copenhagen

Nov. 15, 1922, **65**, No. 46

*Scleroma in the Rhinopharynx. O. Boserup and A. Nyfeldt.—p. 769.

Rhinopharyngeal Scleroma.—Pains in the left ear and deafness were the first symptoms in the young woman. Then a catarrhal nasal affection developed and the nose became obstructed, and *Bacterium rhinoscleromatosis* was cultivated from the nasal secretions. Instead of the traditional excision or cauterization of the lesion, autogenous vaccines and roentgen-ray treatment are being used now. Brunner and Kriebel have reported good results from vaccine therapy, but Metscherski saw no benefit from it in a case of eight years' standing. Rydigier has obtained good results with roentgen exposures but the course has to be from two to six months long. He has patients free from recurrence for five years to date.

Nov. 22, 1922, **65**, No. 47

*Carcinoma in Small Intestine. P. Freudenthal.—p. 785.

Carcinoma in Small Intestine.—In the case reported by Freudenthal the woman of 40 developed suddenly pains in the abdomen and vomiting. The pains began half an hour after eating, with a sensation of oppression in the cardia, increasing to severe pains. They began in the epigastrium, a little to the right of the median line, and spread to the umbilicus and then over the whole abdomen, persisting for up to four hours unless relieved by morphin. Vomiting also gave some relief. There never was any visible blood in vomit or stools. Between the attacks there was no pain or dyspepsia. At the fourth month an operation on the diagnosis of stenosis disclosed the cancer.

Norsk Magazin for Lægevidenskaben, Christiania

November, 1922, **83**, No. 11

*Tuberculosis of Bronchial Glands in Children. A. Brinchmann.—p. 857.
*Congenital Fracture of the Leg. P. Bull.—p. 872.
Principles for Factory Inspection Work. O. Lorange.—p. 878.
*Chronic Stenosis in Lower Duodenum. S. Widerøe.—p. 894.

Diagnosis of Tuberculous Bronchial Glands in Children.—Brinchmann states that in the 180 children he examined, the seven principal physical tests for tuberculosis were not all found positive in any one instance. In some of the children an acute or subacute tuberculous process is probable, but none of these seven tests elicited a positive reaction. He adds that the passing years are increasing skepticism rather than confidence in the instructiveness of roentgen-ray findings in children. Only four points are certain to date: namely, that normal glands and freshly enlarged glands cast no shadow, but cheesy glands and opaque and calcified glands cast a distinct shadow. The shadow of tracheobronchial glands usually falls inside the shadow of vertebrae, and thus escapes detection, and the left hilus glands are masked by the heart shadow. The right hilus glands may be masked by vessels and bronchi absorbing the rays, and dappling the roentgenogram even in normal conditions. The d'Espine sign was positive in 65 per cent. of the 103 children supposed to have tuberculous bronchial glands, and interscapular vesicular breathing was found in 42 per cent. The de la Camp's percussion of the spine was positive in 18 per cent., but the Smith sign—a humming sound heard at the manubrium of the sternum when the head is bent backward—was present in only 13 per cent., and interscapular dulness in only 15 per cent. In 23 of the children both the d'Espine and interscapular vesicular breathing were manifest, and in 11 in this group the roentgen findings were confirmatory. In 8 cases the d'Espine, de la Camp, sternum dulness and bronchial vesicular breathing were associated. Petruschky's spinalgia was found in only 2 of 300 children examined; in one case with and in one without enlarged bronchial glands. In the 41 children with positive roentgen findings indicating bronchial gland disease, 10 had no other signs of it; 28 had a positive d'Espine; 20 had interscapular vesicular breathing, and 17 had both. On the other hand, in 50 negative roentgen cases, in 28 there were one or more signs pointing unmistakably to hilus tuberculosis. His positive findings in all this material are meager, but they show that, taken together, the roentgen and physical signs may transform suspicion into certainty although none alone is conclusive.

Congenital Fracture of the Leg.—In one of Bull's two cases a congenital fibrous osteitis was evidently responsible for the fracture, as also in Frangenheim's case. Characteristic for these congenital fractures is the difficulty in getting the fracture to heal; some local changes must evidently be responsible for this as other fractures in these children seem to heal normally. In one of his cases he finally succeeded in securing consolidation at the age of 14, after several ineffectual operations in early childhood. The bone had probably outgrown the fibrous osteitis in the course of the years. This experience warns not to be hasty in amputating an ununited fracture in a child but give Nature plenty of chance to heal the bone disease first.

Chronic Stenosis of Lower Duodenum.—Widerøe relates that all his five patients in this group were women from 21 to 33 years old. Four had had symptoms for from four to ten years, the other for only a few months. All had been treated on the assumption of a gastric ulcer. The symptoms had been so sudden and severe in one case that perforation had been assumed. In all there had been paroxysms of pain and vomiting, but in some there were no symptoms in the intervals; in the others there was more or less continuous pain. The patients felt best before meals, and disturbances in time followed every meal. There were no characteristic nocturnal attacks, and the character of the food did not seem to have any influence. The patients felt relieved by vomiting, and there was no hematemesis. A course of treatment for ulcer had very little if any effect. A constant tendency to nausea with eructations seems characteristic. The pain was referred to the epigastrium to the right or left of the median line. The pain was of a boring nature, not like colic. The duodenum was not dilated enough to be palpated in these cases. He thinks this stenosis in the lower duodenum occurs more often than supposed, and fails to be correctly diagnosed. Duodenojejunostomy cured all the disturbances in two of his cases. In another case the operation is quite recent, and in the two other cases the intervention was restricted to detaching adhesions and fastening the colon in place. The symptoms were only temporarily relieved, and the condition is now as bad as ever. The milder cases may yield to medical measures, laxatives, reclining after eating, raising the foot of the bed a little at night, abdominal massage, fats, etc. The passage into the duodenum may become more permeable under this treatment and the symptoms subside. If not, the duodenum should be sutured to the jejunum.

Ugeskrift for Læger, Copenhagen

Nov. 2, 1922, **84**, No. 44

*Traumatic Neuroses. A. Wimmer.—p. 1475.
The Fat Soluble A Substance and Rachitis. C. E. Bloch.—p. 1486.

Traumatic Neuroses.—Wimmer explains that the traumatic neurosis is the physical and mental manifestation of an emotional shock. The emotional shock may have been so severe as to induce temporary amnesia, and thus the causal shock may not be remembered. He explains that this *enfant terrible* of accident insurance requires the same impartial analysis of its symptoms and causes as the material consequences of a trauma, and proper treatment as a pathologic condition.

Nov. 9, 1922, **84**, No. 45

*Intravenous Injections of Glucose. S. Jørgensen and T. Plum.—p. 1525.
Bismuth Treatment of Syphilis. H. Müller.—p. 1547.

Intravenous Injections of Glucose.—The tests here reported have apparently established that intravenous injection of 20 gm. of glucose is entirely harmless. The glucose was injected, after a fast, dissolved in 50 c.c. of water. The sugar content of the blood was recorded at the end of three minutes, and again every two or three minutes for fifteen minutes, and then at longer intervals up to three hours. In seventeen nondiabetic individuals, a typical chart reveals a rise of the sugar content from 0.080 to 0.310 at the end of three minutes, a steep drop from this to 0.160 at the end of ten minutes, and to 0.066 at the end of sixty minutes. The sugar content had returned to the original level of 0.08 by the end of the second hour. In the fifteen diabetics, the chart is quite different. The original peak is equally steep, but not above 0.280, and the decline is more gradual. Even by the end of the third hour the sugar level still averages 0.130. The advantage of this method is that only 20 gm. of glucose are required, and the whole test is complete in two hours. If the original sugar level has not been reached by this time, the carbohydrate metabolism is scarcely normal. The findings show among other things that benign glycosuria is most certainly not diabetic. Also that the condition of the kidneys does not seem to have much bearing on the regulation of the sugar in the blood.

Nov. 16, 1922, **84**, No. 46

Tuberculous Mesenteric Glands in Children. H. R. Krogsgaard.—p. 1579.

Nov. 23, 1922, **84**, No. 47

*Wassermann Reaction Late in Syphilis. T. E. H. Thaysen.—p. 1617.
*Pernicious Anemia After Roentgen Treatment. I. Hansen.—p. 1643.

Nov. 30, 1922, **84**, No. 48

Recent Literature on Phenobarbital. J. Riising.—p. 1671.
To Relieve Pain of Anal Fissure. E. Sylvest.—p. 1678.

Wassermann Reaction in Late Syphilis.—Thaysen analyzes the Wassermann findings in 111 cases of tabes, fifty-four men and fifty-seven women, in relation to prognosis. A positive reaction does not seem to have any bearing on the prognosis in the pronounced cases. A negative reaction in the abortive cases seems to indicate a nonprogressive course later. In the total 111 cases, a positive response to the Wassermann test was obtained only in about a third of the cases.

Pernicious Anemia in Exophthalmic Goiter.—The pernicious anemia developed acutely, directly after a course of roentgen treatment. The causal connection seemed unquestionable although preexisting achylia may have afforded a predisposition. The patient was a woman, aged 30, who had been under treatment for hyperthyroidism at intervals during several years.